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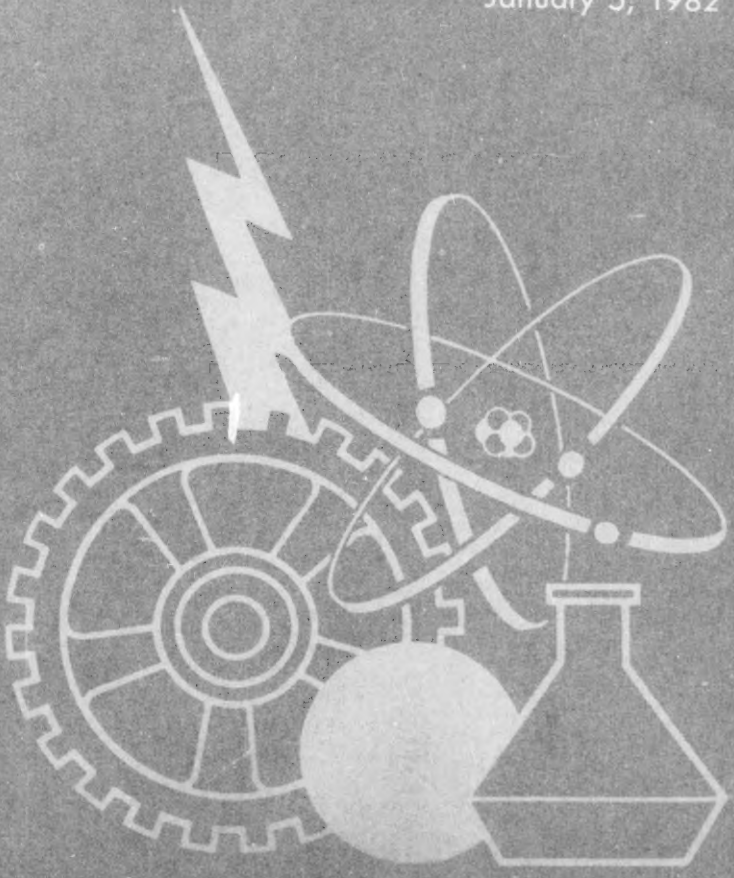
of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

January 5, 1982



U.S.
DEPARTMENT
OF COMMERCE

Patent
and
Trademark
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ERRATA SHEET

The contents page below should have been printed in the TRADEMARK OFFICIAL GAZETTE of January 5, 1982 (Volume 1014, Number 1). The information on the following pages should be added to the Consolidated Listing as it appeared in both the TRADEMARK OFFICIAL GAZETTE and PATENT OFFICIAL GAZETTE of January 5, 1982. Please remove these pages and place in that book.

OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

January 5, 1982 Volume 1014 Number 1

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly, subscription $360.00 per annum for first-class mailing, also available as fourth-class mail at $250.00 domestic; $312.50 foreign; foreign first-class mailing rates will be furnished upon request; single copies each, $6.50 domestic, $8.15 foreign.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly, subscription $115.00 per annum, foreign mailing $143.75 per annum; single copies $3.75 each domestic, $4.10 foreign.

GENERAL INFORMATION concerning PATENTS, price $2.50 each.

GENERAL INFORMATION concerning TRADEMARKS, price $2.00 each.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at 50 cents each; PLANT PATENTS in color, $1.00 each; copies of TRADEMARKS AND DESIGN PATENTS at 20 cents each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

The following information should be noted in referring to the Consolidated Listing that appeared in the January 5, 1982, TRADEMARK OFFICIAL GAZETTE and PATENT OFFICIAL GAZETTE.

The footnotes appearing on page 115 belong to Item (65) on pages 28 through 33 and the footnotes on page 187 belong to Item (121) on pages 157 through 170.

Pages 95 A, B, C and D should be inserted in their appropriate place.

The number appearing in the Index on page 187 under Trademarks are page numbers not item numbers.

CONSOLIDATED LISTING OF RECENT OFFICIAL GAZETTE NOTICES RE PATENT AND TRADEMARK OFFICE PRACTICES AND PROCEDURES

PATENT NOTICES

The following is a compilation of the more important notices and rule changes which have been published in the Official Gazette from July 1, 1964, through December 31, 1981. These notices and rule changes are currently in effect unless otherwise noted.

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INFORMATION AND CORRESPONDENCE

(1) Official Patent Office Mailing Address Remains Washington, D.C.

The official mailing address for all communications sent to the Patent Office remains:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Any telegrams sent to the Patent Office must also bear the above identical address.

The physical location of the Patent Office is 2021 Jefferson Davis Highway, Arlington, Virginia. This address must not be used when addressing mail to the Patent Office.

No reference to Crystal Plaza, Virginia, should be made in the address of *any* communication intended for delivery to the Patent Office by the Post Office Department or Western Union.

Compliance with this instruction will help prevent any unnecessary delay in the delivery of mail, telegrams, etc.

C. A. KALK,
Feb. 20, 1969. *Director of Administration.*

(Office name change per Public Law 93-596, Jan. 2, 1975)

[860 O.G. 662]

(2) Group Number Should Appear on Communications Relating to Pending Applications

It is again requested that the Group number be typed on amendments and other communications relating to pending applications in order to expedite the handling of mail and to conserve manpower. The number of the Group should be placed on the right-hand side, opposite the Serial Number or name of applicant. In view of the vast amount of mail, continued careful attention to these details will do much toward avoiding delay in handling of mail.

C. A. KALK,
Nov. 6, 1969. *Director of Administration.*

[869 O.G. 345]

(3) Identification for Application Correspondence

The Office is continuing to experience difficulty in matching incoming papers with the corresponding application files. This applies especially to responses to Office Actions, powers of attorney, changes of address, status letters, requests for extensions of time, and petitions.

A very necessary part of a complete identification of a pending application is the three-digit Group or Art Unit number, e.g., 110 or 111. Frequently, the Group Art Unit number is entirely omitted, or there are errors in this number. In the latter situation the error often occurs as a result of the case having been reassigned within the Office, and the communication is directed to an Examining Group other than that indicated in the most recent Office Action.

Where the Group Art Unit number is entirely omitted, the routine operations of the Application Branch must be interrupted solely for the purpose of determining the location of the application so that the communication can be properly routed. Under these circumstances the efficiency of the Application Branch is impaired and the incoming paper is delayed in reaching its proper destination. Where such papers are not essential to compliance with a statutory period or time limit for response, they may be returned for completion to identify the location of the files.

To assist the Office in expediting its business, it is requested that ALL papers relating to a pending application include the following information:

1. Serial number (checked for accuracy),
2. Group Art Unit number (copied from filing receipt or most recent Office Action),
3. Filing date,
4. Name of the Examiner who prepared the most recent Office Action.
5. Title of the invention.

To further reduce the burden on Application Branch and the Examining Groups, it is also requested that the submission of additional or supplemental papers on a newly filed application be deferred until a filing receipt has been received. In the same vein, it would be appreciated if the filing of additional papers, relating to an allowed application were deferred until a notice of allowance (POL-85) was received.

If the above suggestions are adopted the processing of both new and allowed applications could proceed more efficiently and promptly through the Patent Office.

RICHARD A. WAHL,
Mar. 5, 1971. *Assistant Commissioner.*

[885 O.G. 2]

(4) Identifying Application Correspondence With Issue Batch Number

Applicants or their attorney or agent can facilitate matching incoming papers with the corresponding application file by indicating the Issue Batch Number on all papers filed in the Office after receiving the Notice of Allowance and before the time the Issue Fee Receipt is received.

The Issue Batch Number is printed on the Notice of Allowance form in Box 4 in the lower left-hand corner below the address. The Issue Batch Number consists of a capital letter followed by two digits, for example; "A03," "D18," "F42," "J79." Any lower case letters before the Issue Batch Number should be ignored since they are the typist's initials. Use of the Issue Batch Numbers is important since the allowed applications are filed by these numbers.

Any paper filed after receiving the Issue Fee Receipt should include the indicated patent number rather than the Issue Batch Number. At this time in the processing, the Issue Batch Number is no longer useful since the ap-

plication has been removed from the batch at the time the patent number was assigned.

RICHARD J. SHAKMAN,
Jan. 16, 1976. *Assistant Commissioner for Administration.*

[943 O.G. 519]

(5) **Hand Delivery of Papers**

The notices of November 10, 1969 (869 O.G. 345) and September 8, 1970 (879 O.G. 667), regarding "Hand Delivery of Papers," are superseded and the practice indicated below is hereby made effective.

Any paper which relates to a pending application may be personally delivered to an Examining Group. However, the Examining Group will accept the paper only if: (1) the paper is accompanied by some form of receipt which can be handed back to the person delivering the paper; and (2) the Examining Group being asked to receive the paper is responsible for acting on the paper.

The receipt may take the form of a duplicate copy of such paper or a card identifying the paper. The identifying data on the card should be so complete as to leave no uncertainty as to the paper filed. For example, the card should contain the applicant's name(s), Serial No., filing date and a description of the paper being filed. If more than one paper is being filed for the same application, the card should contain a description of each paper or item.

Under this procedure, the paper and receipt will be date stamped with the Group date stamp. The receipt will be handed back to the person hand delivering the paper. The paper will be correlated with the application and made an official paper in the file, thereby avoiding the necessity of processing and forwarding the paper to the Examining Group via the Mail Room.

The Examining Group will accept and date stamp a paper even though the paper is accompanied by a check or the paper contains an authorization to charge a Deposit Account. However, in such an instance, the paper will be hand carried by Group personnel to the Office of Finance for processing and then made an official paper in the file.

WILLIAM FELDMAN,
Jan. 29, 1974. *Deputy Assistant Commissioner for Patents.*

[919 O.G. 1070]

(6) **Post Card Receipt Reminder**

Applicants and their attorneys or agents are reminded of the provision in Section 717.01(a) (now Section 503) of the Manual of Patent Examining Procedure relating to the use of post cards as "receipts" of papers filed in the Patent Office.

If a receipt for any paper filed in the Patent Office is desired, it may be had by enclosing with the paper a self-addressed post card identifying the paper. The Patent Office will stamp the receipt date on the card and place it in the outgoing mail.

The identifying data on the card should be so complete as to match the paper with the application or other document to which it is to be associated. For example, the document should be identified by the applicant's name(s), Serial No., filing date, appeal number, interference number, etc., and the paper should be identified by specifying the type thereof, viz, affidavit, amendment, appeal, application papers, brief, drawings, fees, motions, supplemental oath or declaration, petition, etc.

When papers for more than one document are filed under a single cover a return post card should be attached to the paper for *each* document for which a receipt is desired.

RICHARD A. WAHL,
Nov. 21, 1968. *Assistant Commissioner.*

[857 O.G. 667]

(7) **Status Inquiries**

In an effort to sharply reduce the volume and need for status inquiries, the past policy that diligence must be established by making timely status requests in connection with petitions to revive is hereby discontinued.

When an application has been abandoned for an excessive period before the filing of a petition to revive, an appropriate terminal disclaimer may be required. It should also be recognized that a petition to revive must be accompanied by the proposed response unless it has been previously filed (Rule 137). Also, under Rule 113, "Response to a final rejection or action must include cancellation of, or appeal from the rejection of, each claim so rejected and, if any claim stands allowed, compliance with any requirement or objection as to form."

New Applications

Current examining procedures now provide for the routine mailing from the Examining Groups of Form POL-327 in *every* case of allowance of an application except where an Examiner's Amendment is promptly mailed. Thus, the separate mailing of a Form POL-327 or an Examiner's Amendment in addition to a formal Notice of Allowance (POL-85) in all allowed cases would seem to obviate the need for status inquiries even as a precautionary measure where the applicant may believe his new application may have been passed to issue on the first examination. However, as an exception, a status inquiry would be appropriate where a Notice of Allowance is not received within three months from receipt of either a Form POL-327 or an Examiner's Amendment.

Current examining procedures also aim to minimize the spread in dates among the various examiner dockets of each Art Unit and Group with respect to actions on new applications. Accordingly, the dates of the "oldest new applications" appearing in the *Official Gazette* are fairly reliable guides as to the expected time frames of when the Examiners reach the cases for action.

Therefore, it should be rarely necessary to query the status of a new application.

Amended Applications

Amended cases are expected to be taken up by the examiner and an action completed within two months of the amendment date. Accordingly, a status inquiry is not in order after response by the attorney until five or six months have elapsed with no response from the Patent Office. A post card receipt for responses to Office actions, adequately and specifically identifying the papers filed, will be considered *prima facie* proof of receipt of such papers. Where such proof indicates the timely filing of a response, the submission of a copy of the post card with a copy of the response will ordinarily obviate the need for a petition to revive. Proof of receipt of a timely response to a final action will obviate the need for a petition to revive only if the response was in compliance with Rule 113.

In General

It is expected that this new policy will result in sharply reducing the number of status inquiries and permit the time now spent on them to be used in increasing Patent Office efficiency in other more essential areas.

Such status inquiries as may be still necessary may be more expeditiously processed by the Patent Office if each inquiry includes the application Serial Number, filing date, name of the applicant, name of the Examiner who prepared the most recent Office action, and Group Art Unit (taken from the most recent Office communication) in addition to the last known status of the application, and is accompanied by a stamped return-addressed envelope. Telephone inquiries regarding the status of applications should be directed to the group clerical personnel and not to the examiners. Inasmuch as the official records and applications are located in the clerical section of the Examining Groups, the clerical personnel can readily provide status information without consulting the examiners.

Status replies will be made by the Patent Office cleri-

cal support force and will only indicate whether the application is awaiting action by the Examiner or the applicant's response to an Office action. In the latter instance the mailing date of the Office action will also be given.

The Notices of Dec. 5, 1969 (869 O.G. 1031) and Sept. 22, 1965 (819 O.G. 444) are hereby superseded.

RICHARD A. WAHL,
Nov. 24, 1971. *Assistant Commissioner of Patents.*

[893 O.G. 810]

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(8) **Change of Address**

There recently has been an increased incidence in the number of applications suffering from disruptions in communications stemming from failure to notify the Patent and Trademark Office of a change of address on the part of applicant's representative (attorney or agent of record) in each application wherein he holds an active power of attorney. Applications have become abandoned as a result of an Office action being mailed to the old, uncorrected address and thereby failing to reach the representative at his new address sufficiently early to permit him to file a timely response. Accordingly, the requirement set out below is published as a reminder and is designed to ameliorate this problem.

Where an attorney or agent of record (or applicant, if he is prosecuting his application pro se) changes his correspondence address, he is responsible for promptly notifying the Patent and Trademark Office of his new correspondence address (including ZIP code number). A separate notification must be filed in *each application* for which he is intended to receive communications from the Office. The notification should also include his telephone number.

While the notification need take no particular form, it should be provided in a manner calling attention to the fact that a change of address is being made. Thus, the mere inclusion, in a paper being filed for another purpose, of an address different from the previously provided correspondence address, without mention of the fact that an address change is being made, would not ordinarily be recognized or deemed as instructions to change the address on the file record.

It is emphasized that the above-delineated responsibility is *additional* to the separate obligation (see 37 CFR 1.347) of a registered attorney or agent to notify the Attorney's Roster of any change of his address for entry on the register, which must be done in a letter separate from any notice or change of address filed in individual applications. That obligation continues without change.

The degree of care exercised in adhering to the foregoing requirement for notification of change of address in each concerned application will be a factor for consideration in deciding petitions filed under 37 CFR 1.137 to revive applications which have become abandoned because of a failure to timely receive an Office action addressed to the old address. In such instances, the showing of the cause of unavoidable delay must include an adequate showing that a timely notification of the change of address was filed in the concerned application, in a manner reasonably calculated to call attention to the fact that it was a change of address. If no such notification was made, or was made belatedly, the showing must include an adequate explanation of that failure or delay. A showing that notification was made on a paper filed in the Patent and Trademark Office listing *plural* applications as being affected will not be considered a proper notification.

WILLIAM FELDMAN,
May 28, 1975. *Deputy Assistant Commissioner for Patents.*

[935 O.G. 1352]

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(9) **Change of Address or Practitioner in a Plurality of Patent Applications**

Change of Address

This notice is supplemental to the Notice of May 28, 1975, 935 O.G. 1352.

In those instances where a change in the correspondence address of a registered attorney or agent is necessary in a plurality of applications, and the number of applications is such as to cause undue hardship, the notification filed in each application may be a reproduction of a properly executed, original notification. The original notice may be sent to the Office of the Solicitor as notification to the Attorney's Roster of the change of address, or may be filed in one of the applications affected, provided that the notice includes an authorization for the public to inspect and copy the original notice in the event one of the applications containing a copy matures into a patent and the application containing the original paper is either pending or has become abandoned. The copies submitted in each affected application must identify where the original paper is located. Otherwise, the practice governing the filing of notifications of change of address remains the same.

Powers of Attorney

In the event of a need to file a change in the power of attorney in a plurality of applications of a common assignee or inventive entity, and the number of applications is such as to cause undue hardship, a single, original paper may be used provided that a reproduction of this original paper is supplied in each of the affected applications. The copy of the original paper must identify in which application the original paper is located and authorize the public to inspect and copy the original paper in the event one of the applications containing a copy matures into a patent and the application containing the original paper is pending or has become abandoned. The procedures and usual prerequisites for the filing of grants and/or revocations or power of attorney otherwise remain the same.

WILLIAM FELDMAN,
Sept. 9, 1976. *Deputy Assistant Commissioner for Patents.*

[951 O.G. 454]

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(10) **Express Mail**

This notice is in response to a number of inquiries received in the Patent and Trademark Office regarding the notice on Express Mail of February 11, 1975, published in the *Official Gazette* of March 11, 1975 (932 O.G. 340).

There are two types of Express Mail delivery offered by the U.S. Postal Service—"Post Office to Addressee" and "Post Office to Post Office." The only type of service which can be used for Express Mail directed to the Patent and Trademark Office is "Post Office to Addressee." This service provides for delivery to one of our employees in Room 1627, Department of Commerce Building, Washington, D.C., no later than 3:00 p.m. of the next workday following its deposit before 5:00 p.m. at any postal facility with an Express Mail window.

The only address that should be used for Express Mail sent to the Patent and Trademark Office is:

"Commissioner of Patents and Trademarks
Washington, D.C. 20231."

"Post Office to Post Office" Express Mail *does not* provide for delivery but instead is retained at the postal facility of the addressee for pickup. The Postal Service *does not* notify the addressee that this type of Express Mail has been received and is awaiting pickup. If not picked up, this mail is held for 15 days and then returned to the sender.

Therefore, since the Patent and Trademark Office does not have resources for picking up any mail, including Express Mail, the "Post Office to Post Office" Express Mail will not reach the Patent and Trademark Office.

WILLIAM I. MERKIN,
May 15, 1975. *Acting Assistant Commissioner for Administration.*

[936 O.G. 1554]

(11) **Certificate of Mailing Procedures**

On November 1, 1976, the Patent and Trademark Office instituted the Certificate of Mailing Procedure by promulgating 37 CFR 1.8 in an attempt to reduce the number of problems resulting from late receipt of responses due to mail delays. This notice was published in the *Official Gazette* on October 26, 1976 (951 O.G. 1342 and TM 210). Guidelines relative to this procedure were published in the *Official Gazette* on November 16, 1976 (952 O.G. 918 and TM 174).

Although the new procedure has gained wide acceptance, it has not been entirely without problems. One major problem involves the correlation of the certification with the appropriate papers when presented on a separate sheet. In order to curtail this problem and other minor ones, the guidelines published on November 16, 1976, are superseded by the following guidelines. They are applicable to responses in both patent and trademark matters, as permitted by 37 CFR 1.8.

Guidelines

A) The certification requires a signature. Specifically, if the certification appears on a paper that requires a signature, two signatures are required, one for the paper and one for the certification. Although not specifically required by 37 CFR 1.8, it is preferred that the certificate be signed by the applicant, assignee, or registered practitioner.

B) When possible, the certification should appear on a portion of the paper being submitted. However, if there is insufficient space to make the certification on the same paper, such as in the case of the patent issue fee transmittal form PTO-85, the certification should be on a separate sheet securely attached to the paper.

C) When the certification is presented on a separate sheet, the sheet must (1) be signed and (2) fully identify and be securely attached to the paper it accompanies. The required identification should include the serial number and filing date of the application as well as the type of paper being filed, e.g., responses to rejection or refusal, Notice of Appeal, etc. An unsigned certification will not be considered acceptable.

Moreover, without the proper identifying data, a certification presented on a separate sheet will not be considered acceptable if there is any question or doubt concerning the connection between the sheet and the paper filed.

If the sheet should become detached from the paper and thereafter not associated with the appropriate file, evidence that this sheet was received in the Office can be supported by submitting a copy of a post card receipt specifically identifying this sheet and the paper and by submitting a copy of the sheet as originally mailed. Attention is directed to the notice of November 21, 1968 published in the *Official Gazette* (857 O.G. 667) relative to the use of post cards as receipts.

D) In situations wherein the correspondence includes papers for more than one application (e.g., a single envelope containing separate papers responding to Office actions in different applications) or papers for various parts of the Office (e.g., a patent issue fee transmittal form PTO-85 and an assignment), each paper must have its own certification as a part thereof or attached thereto.

E) In situations wherein the correspondence includes several papers directed to the same application (e.g., a proposed response under 37 CFR 1.116 and a Notice of Appeal), each paper should have its own certification as a part thereof or attached thereto.

Use of Stamped Certification

Some practitioners are placing the certification language on the first page of a paper with an inked stamp. Such a practice is encouraged because the certification is not only readily visible but also forms an integral part of the paper. An example of a preferred stamp is:

> I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, on _____
> (Date of Deposit)
>
> _____
> Name of applicant, assignee, or Registered Representative
>
> _____
> Signature
>
> _____
> Date of Signature

Interpretations

The phrase "prior to expiration of the set period" in 37 CFR 1.8(a) includes the last day of the set period, which last day may be the "next succeeding secular or business day" as set out in 35 U.S.C. 21. Also, the filing of a 37 CFR 3.54 form to effect a filing under 37 CFR 1.60 is considered the filing of an application and is, therefore, excluded from the Certificate of Mailing Procedure.

C. MARSHALL DANN,
Aug. 30, 1977. *Commissioner of Patents and Trademarks.*

[962 O.G. 20]

(12) **Change in Legal Holidays**

The Commissioner's Notice of December 2, 1970, "Change in Legal Holidays" is hereby rescinded, in view of Public Law 94-97, September 18, 1975, 89 Stat. 479, which amended the listing of legal public holidays in 5 USC §6103 by changing the Veterans Day holiday from the fourth Monday in October to November 11 of each year. Section 6103, as amended, reads as follows:

(a) The following are legal public holidays:
New Years Day, January 1.
Washington's Birthday, the third Monday in February.
Memorial Day, the last Monday in May.
Independence Day, July 4.
Labor Day, the first Monday in September.
Columbus Day, the second Monday in October.
Veterans Day, November 11.
Thanksgiving Day, the fourth Thursday in November.
Christmas Day, December 25.

Each of the holidays enumerated will constitute "a holiday within the District of Columbia," as referred to in Section 21, Title 35, United States Code.

Attention is called to the fact that the above listing of holidays in 5 USC §6103, as amended, should be followed, rather than the listing appearing on page 69 of the June 1979 Patent Laws pamphlet which does not reflect the noted amendment.

LUTRELLE F. PARKER,
Sept. 25, 1979. *Acting Commissioner, U.S. Patent and Trademark Office.*

Editorial Note: Sec. 6103(c) states that January 20 of each fourth year after 1965, Inauguration Day, is also a legal public holiday.

[987 O.G. 30]

(13) **Acceptable Drawings for Patents**

Approximately ten years ago, the Office's standards for acceptable drawings with respect to certain matters including the blackness and minimum thickness of inked lines, and shading of drawings, were relaxed in order to reduce the backlog of informal drawings at that time.

Apparently, because of the increased use of pens with a round, open-end capillary tip in place of the conventional draftsman's drawing pen, the Office now has a problem of obtaining acceptable reproduction copies of thin, light and gray lines which appear on many drawings. As a result, approximately 10,000 drawings sheets filed each year are *not* acceptable for normal reproduction and microfilming from the printed copy. Special printing steps must be taken to try to print very thin or light lines. Inked lines should be at least 0.012 inch in width and no closer together than 0.05 inch. Shading

lines should be constructed to meet these criteria for acceptable drawings. The inked lines must not rub off the standard bristol board sheet, and their reflectance should not exceed 12%.

Applicants and draftsmen are requested not to use thin or light lines on their drawings. In the future, drawing requirements will be more stringent regarding the blackness and minimum thickness of lines to be acceptable. The Chief Draftsman has been instructed to adhere strictly to the above standards and criteria after January 1, 1978 so that special printing requirements can be held to a minimum.

Persons interested in examples of acceptable and unacceptable lines for drawings may obtain one set of "Printed Examples from Unacceptably Inked Drawings" by writing to:

The Chief Draftsman
U.S. Patent and Trademark Office
Washington, D.C. 20231

RICHARD J. SHAKMAN,
Oct. 20, 1977. *Assistant Commissioner for Administration.*

[964 O.G. 21]

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(14) **Regulations for the Use of the Facilities of the Patent and Trademark Office**

Revision of Regulations

Agency: Patent and Trademark Office, Commerce.
Action: Notice.
Summary: The Patent and Trademark Office gives notice of a revision of its "Regulations for the Public Use of Records in the Public Search Room for Patents of the Patent and Trademark Office," published in the Federal Register of July 14, 1976, 41 FR 29009. The regulations published in the Federal Register of July 14, 1976, are limited to the use of the Public Search Room for Patents. The revision is intended to allow public use of other Patent and Trademark Office record facilities with minimum risk to the security of Patent and Trademark Office personnel and government property.
Effective Date: June 26, 1979.
For Further Information Contact: Bradford R. Huther, Deputy Assistant Commissioner for Administration, Patent and Trademark Office, Washington, D.C. 20231, 703-557-2290.
Supplementary Information: This revision is an extension of the present regulations, published in the Federal Register of July 14, 1976, 41 FR 29009, to allow public use of Patent Examining Group Facilities and the Scientific Library under conditions which are as nearly as possible the same as those which apply to the Public Search Room for Patents.

All persons seeking use of the Public Search Room for Patents and/or the Patent Examining Group Facilities must obtain a User Pass. The guards at the entrances to the Public Search Room for Patents can direct prospective users to the pass issuance desk. User Passes will be issued to persons not under prohibition from using the facilities who agree to abide by the regulations of the Public Search Room for Patents and the Patent Examining Group Facilities.

The use of the Group facilities for search purposes by members of the public is strictly limited to the search of materials not available in the Public Search Room for Patents or the Scientific Library and when it does not conflict with the regular business of Patent and Trademark personnel and only between the hours of 8:45 a.m. and 4:45 p.m. on regular business days.

The Public Search Room for Patents is open 8:00 a.m.–8:00 p.m., Monday through Friday except on legal holidays. The hours of the Record Room are 8:00 a.m.–5:00 p.m. on the days the Public Search Room for Patents is open.

The revised regulations appear below:

Regulations

Regulations for members of the public using the facilities of the U.S. Patent and Trademark Office, including but not limited to the Public Search Room for Patents.

The Public Search Room for Patents is defined as that area comprising the foyers of the lobbies of Buildings 3 and 4 of Crystal Plaza; the offices; Microfilm Center; restrooms and telephone areas off these foyers; the stacks; Record Room public reception area; study and copier areas between the foyers; and the Mezzanine.

The facilities of the Patent Examining Groups are defined as those areas in Buildings 3, 34 and 4 of Crystal Plaza designating Examining Groups.

With the respect to the Group Facilities, authorized personnel under these Regulations, include Supervisory Patent Examiners and Examining Group Directors.

The Scientific Library is located on the second floor of Building 34 of Crystal Plaza.

To maintain and protect the patents and related records located in the Public Search Room for Patents and the Patent Examining Group Facilities, it is necessary to establish and to enforce certain rules and regulations pertaining to the use thereof. Under applicable statutes and regulations, including 40 U.S.C. 486(c); 41 CFR Subpart 101-20.3; and appropriate Sections of Department Organization Orders 30-3A and 30-3B of the Department of Commerce, the regulations appearing below are established for those using the facilities of the Patent and Trademark Office.

These regulations supersede all previous regulations on the subject.

1. All persons using the facilities of the Patent and Trademark Office are subject to the regulations governing conduct on property under the charge and control of the General Services Administration which appear in 41 CFR Subpart 101-20.3 [41 CFR §§101-20.300 through 101-20.314].
2. All posted Official Notices are to be complied with.
3. Smoking is not permitted except in designated areas.
4. No food or beverages in any form are to be consumed except in designated areas.
5. Loud talking, use of radios, and any other forms of activity which may disturb other members of the public and/or Patent and Trademark Office personnel are forbidden.
6. Children brought into the Patent and Trademark Office must not be allowed to disturb others.
7. Users of the facilities may not give the Patent and Trademark Office as a mailing address or otherwise suggest that mail may be received at the Patent and Trademark Office; nor may correspondence be conducted on official Patent and Trademark Office stationery.
8. Messages shall not be affixed to walls, desks, phone booths, or other public property, except designated message boards.
9. Patent records and any other property of the Patent and Trademark Office shall not be removed from their normal location without permission from an authorized official; nor shall such records or property be mutilated. Authorization will not be given to remove from any Group Facility, U.S. patents or any other material readily available through the Scientific Library.
10. The use of equipment such as reproducing machines, typewriters and photographic equipment is prohibited without prior permission from an authorized official. Relative to the Public Search Room, the use of dictation equipment is prohibited except in designated areas. Whenever permission is obtained, the use of such equipment must not conflict with Regulation 5.
11. In the Public Search Room for Patents, library trucks or carts are to be used for transporting bundles only. The trucks or carts are not to be used for storage while making searches.
12. In the Public Search Room for Patents, patents temporarily removed from bundles for any purpose must be returned to the proper place in the appropriate bundle.
13. In the Public Search Room for Patents, all bundles

of patents must be promptly and properly replaced in the stacks by the user.

14. The reserving of seats and/or working areas is prohibited.
15. Users of the Public Search Room for Patents are not permitted to use Patent and Trademark Office facilities beyond the Public Search Room for Patents after 5:00 p.m.
16. The front portion of the Public Search Room for patents, i.e., that portion facing Crystal Plaza Drive and having a high ceiling shall not be occupied by users after 6:00 p.m.
17. A valid User Pass must be worn and visible at all times when Patent and Trademark Office facilities are being used. In addition, all persons holding User Passes must register with the designated representative in each Examining Group where they search and must sign a log (sign-in, sign-out sheet) indicating time-in, time-out, name, User Pass number, class(es) and subclass(es) users after 6:00 p.m.
18. User Passes are nontransferable and must be surrendered to authorized Patent and Trademark personnel upon request for cause.
19. Packages, briefcases or other personal effects brought into the Public Search Room for Patents or the Group Facilities are subject to search by authorized Patent and Trademark Office personnel upon request.
20. All packages, briefcases or other personal effects brought into the Group Search Rooms must be removed when leaving the Group Search Room areas.
21. Patents and other documents must not be removed from the Group patent shoes for any reason other than for cursory study thereof while kept in close proximity with the shoe and must not be moved out of their normal sequence.
22. All patent shoes must be promptly replaced in their proper location in the shoe cases.
23. All textbooks, journals and the like must be returned to their proper location.
24. All persons using the facilities of the Patent and Trademark Office are to refrain from engaging in any conduct which (1) is criminal in nature or (2) which causes or appears to cause an employee of the Patent and Trademark Office to violate the conflicts of interest regulations of the Department of Commerce [15 CFR §§0.735-1 through 0.735-41].
25. All verbal requests for compliance with these regulations or other posted Patent and Trademark Office Notices pertaining to activity in the Public Search Room for Patents and the Group Facilities, when made by authorized Patent and Trademark Office personnel, must be promptly complied with.

These regulations will be enforced in accordance with the Procedures for Enforcement published in the Federal Register of May 17, 1978, 43 FR 21345 (970 O.G. 114, published May 30, 1978).

Persons violating these regulations may be denied the use of the facilities in the Public Search Room for Patents and the Patent Examining Group Facilities and may further be subjected to prosecution under the Criminal Code. Additionally, the name of any person violating these regulations who is registered to practice before the Patent and Trademark Office may be forwarded to the Solicitor for appropriate action under 37 CFR 1.348.

These Regulations have been instituted in order to maintain high quality and completeness of patent files and to provide, an orderly environment for exploring, or studying in depth, the wealth of scientific and technological information contained in United States Patents. Although the Regulations may cause some inconvenience, the understanding and cooperation of users will insure that, for future users, the knowledge contained in United States Patents will be available in an environment conducive to study in the Public Search Room for Patents and the Patent Examining Group Facilities.

DONALD W. BANNER,
Commissioner of Patents and Trademarks.

June 20, 1979.

[984 O.G. 26]

(15) Regulations Relating to the Use of Patent and Trademark Office Records Facilities

Establishment of Enforcement Procedures

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Notice.

SUMMARY: The Patent and Trademark Office is adopting procedures for enforcing existing regulations governing the use of the Public Search Room for Patents and the Patent Examining Group Search Facilities by members of the public. Enforcement of the existing regulations is necessary, and is intended by these procedures, to carry out the commitment of the Office to the public to promote an atmosphere conducive to research and maintain the integrity of the files in the Public Search Room for Patents and in the Examining Group Search Facilities.

EFFECTIVE DATE: 6-30-78.

FOR FURTHER INFORMATION CONTACT: Bradford R. Hunter, Deputy Assistant Commissioner for Administration, Patent and Trademark Office, Washington, D.C. 20231, (703) 557-2290.

SUPPLEMENTARY INFORMATION: The procedures will apply in enforcing the regulations for the public use of records of the Public Search Room for Patents and the Patent Examining Group Search Facilities. The regulations of the Public Search Room for Patents were published in the Federal Register for July 14, 1976, 41 F.R. 29009, and incorporated in a Search Room User Agreement entered into by each person who is issued a User Pass. Regulations for Users of the Patent Examining Group Search Facilities were established under Rule 2 of the regulations of the Public Search Room for Patents and were published in the OFFICIAL GAZETTE of March 22, 1977, 956 O.G. 1118. The procedures appear below.

PROCEDURES FOR ENFORCEMENT OF THE REGULATIONS FOR THE PUBLIC USE OF RECORDS IN THE PUBLIC SEARCH ROOM FOR PATENTS AND THE PATENT EXAMINING GROUP SEARCH FACILITIES

Under applicable statutes and regulations, including 40 U.S.C. 486(c); 41 CFR 101-20.3; and appropriate sections of Department Organization Orders 30-3A and 30-3B of the Department of Commerce, the procedures appearing below are established.

Violation Involving the Security System

1. *Unauthorized removal of government property.*

(a) The Public Search Room for Patents is equipped with a security system designed to sound an alarm when an attempt to remove government property from the Public Search Room is detected. Each alarm signal triggered by a person passing through an exit to the Public Search Room will be investigated by security guards stationed at the Public Search Room exits. The person involved will be required to stop and allow the security guards to determine the cause of the alarm. If non-government property is the cause for the alarm, the person will be allowed to proceed without further delay. If unauthorized possession of government property is found to be the cause of the alarm, the person in whose possession the property is found will be advised that a violation has occurred and will be required to surrender the property to the Manager of the Public Search Room. An oral explanation for the possession of such property will be requested by the Manager.

(b) The Manager of the Public Search Room will immediately report each incident involving unauthorized possession of government property to the Deputy Assistant Commissioner for Administration by telephone, and if requested submit a written report, together with the government property and User Pass involved to the Deputy Assistant Commissioner for Administration.

(3) If it shall appear to the Deputy Assistant Commissioner for Administration that unauthorized possession

of government property, detected by the security system, was inadvertent or otherwise unintentional, no further action will be taken. Otherwise, the Deputy Assistant Commissioner for Administration will request the person involved to show cause in writing why his or her User Pass should not be suspended or revoked pursuant to the terms of the Search Room User Agreement. A written decision will be rendered by the Deputy Assistant Commissioner for Administration after consideration of any timely submitted response.

Other Violations of the Public Search Room Regulations

2. *All other violations of the Public Search Room Regulations.*

(a) Each observed or reported violation will be investigated by the Manager of the Public Search Room. If a violation has occurred and is not denied, the person involved will be verbally requested by the Manager to comply with the regulations. If the person involved denies that a violation has occurred, or refuses to comply with a verbal request of the Manager to comply with the regulations, or violates the regulations after having agreed to comply with them, the person will be required to surrender his or her User Pass to the Manager of the Public Search Room.

(b) The Manager of the Public Search Room will submit a written report of each violation, and the User Pass, if surrendered, to the Deputy Assistant Commissioner for Administration.

(c) If the Deputy Assistant Commissioner for Administration is satisfied that a reported violation was inadvertent or otherwise unintentional, the User Pass, if surrendered, will be returned and no furt er action will be taken. In all other cases, the Deputy Assistant Commissioner for Administration will request the person involved to show cause in writing why his or her User Pass should not be suspended or revoked pursuant to the terms of the Search Room User Agreement. A written decision will be rendered by the Deputy Assistant Commissioner for Administration after consideration of any timely submitted response.

Violations of the Patent Examining Group Search Facilities Regulations

3. *Violations of the Regulations for Users of the Patent Examining Group Search Facilities.*

(a) Each observed or reported violation will be investigated by Authorized Official. If a violation has occurred, and is not denied, the person involved will be verbally requested to comply with the regulations. If the person involved denies that a violation has occurred, or refuses to comply with a verbal request to comply with regulations, or violates the regulations after having agreed to comply with them, the person involved will be required to surrender his or her User Pass to the Authorized Official.

(b) The Authorized Official will submit a written report of each violation, and the User Pass, if surrendered, to the Deputy Assistant Commissioner for Patents.

(c) If the Deputy Assistant Commissioner for Patents is satisfied that violation was inadvertent or otherwise unintentional, the User Pass, if surrendered, will be returned and no further action will be taken. In all other cases, the Deputy Assistant Commissioner for Patents will request the person involved to show cause in writing why his or her User Pass should not be suspended or revoked. A written decision will be rendered by the Deputy Assistant Commissioner for Patents after consideration of any timely submitted response.

Penalties

4. *Factors to be Considered in Assessing Penalties.*

(a) Penalties will be determined on a case-by-case basis. A record of penalties imposed for given violations will be kept and made available to the public upon request.

(b) Due weight may be given to prior violations of the regulations in assessing whether any given violation is willful, deliberate or intentional.

(c) Prior violations of the regulations will be considered in determining any specific penalty to be imposed. Depending upon the circumstances, the penalty for a first offense may range from an oral or written warning to a 60-day suspension of the User Pass. For a second offense, the penalty may be a suspension of from 5 days to 1 year. For a third offense, the penalty may range from a 30-day suspension to revocation of the User Pass.

General Provisions

5. *Use of Search Facilities During Suspension or After Revocation of User Pass.*

No individual will be permitted to use the Public Search Room for Patents or the Patent Examining Group Search Facilities while his or her User Pass is suspended or revoked.

6. *Temporary User Pass.*

Any person whose User Pass was surrendered, but not suspended or revoked, may be issued a temporary User Pass which shall be valid until the User Pass is returned or a decision is rendered pursuant to paragraph 1(c), 2(c), 3(c).

7. *Absence of the Deputy Assistant Commissioner for Administration.*

In the absence of the Deputy Assistant Commissioner for Administration, the Director of the Office of Patent and Trademark Services will carry out the functions and responsibilities assigned to the Deputy Assistant Commissioner for Administration in paragraph 1(b) and (c) and 2(b) and (c).

8. *Absence of the Manager of the Public Search Room.*

In the absence of the Manager of the Public Search Room, the Acting Manager will carry out the duties and responsibilities assigned to the Manager in paragraphs 1(a), 1(b), 2(a) and 2(b).

9. *Assistance.*

The Manager of the Public Search Room and the Authorized Official may, when necessary request the Security Officer of the Patent and Trademark Office or the GSA to provide assistance in carrying out their function in paragraphs 1(a), 2(a), and 3(a).

10. *Petitions.*

A decision rendered by the Deputy Assistant Commissioner for Administration, the Director of the Office of Patent and Trademark Services, or the Deputy Assistant Commissioner for Patents may be reviewed on petition to the Commissioner.

LUTRELLE F. PARKER,
May 5, 1978. *Acting Commissioner of Patents and Trademarks.*

[970 O.G. 114]

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(16) Use of Certificate of Correction Forms

The purpose of this notice is, to once again, remind patentees and their attorneys and agents to submit the text of any correction under 37 CFR 1.322 and 1.323 on the Certificate of Correction form, PTO-1050, which is available free of charge from the Patent and Trademark Office. The presentation of all corrections on this form permits its use as camera copy for prompt, direct offset printing of the Certificate of Correction.

Instructions for use of Form PTO-1050 are printed on the top portion thereof, and are also set forth, in further detail, in Section 1402.02 of the Manual of Patent Examining Procedures. It is especially important that the typing be clean and clear. Both thin, light type and heavy, smudged type should be avoided. Changes and corrections are preferably made by use of white opaque cor-

rection fluid.

The typing should be within the borders printed on the form and a two-inch blank space should be left at the bottom of the last page of the form for the placement of the signature of the Attesting Officer.

Both sheets of the printed form should be forwarded to the Office. The copies should be stapled together only at the upper left-hand margin at the indicated location.

Copies of form PTO-1050 may be obtained, as needed, from either the Correspondence and Mail Division in Building 2, or from the receptionist in the lobby of Building 3, Crystal Plaza, Arlington, Va.

RICHARD J. SHAKMAN,
May 10, 1977. *Assistant Commissioner for Administration.*

[959 O.G. 3]

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(17) **Government Publications Subscription Service**

The purpose of this notice is to inform subscribers of Federal Government publications serviced by the Government Printing Office, Superintendent of Documents, of the requirement to standardize subscriber change of address procedures.

It is imperative that the Government Printing Office be advised by each subscriber of an address change and that such advisement be accompanied by the latest subscription address label.

The Government Printing Office has the largest number of subscriptions of any activity in the United States, The Superintendent of Documents maintains about 835 mailing lists containing nearly 3 million addresses. Many of these subscribers frequently change their addresses and inform the Superintendent of Documents in a wide variety of methods. Some large organizations have as many as 20 identical subscriptions to the same street address but with different internal deliveries. Altogether the Government Printing Office is mailing nearly 5 million subscription copies each month. The Government Printing Office requests your cooperation to more effectively maintain the many mailing lists.

For your convenience, a change of address form is reproduced on the last page of the OFFICIAL GAZETTE.

BRADFORD R. HUTHER,
Aug. 9, 1977. *Acting Assistant Commissioner for Administration.*

[962 O.G. 2]

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(18) **Notice to Official Gazette Subscribers**

The Patent and Trademark Office announces a change in the point of contact for subscribers who have not been receiving all of their copies of the patent and/or trademark sections of the *Official Gazette*, MPEP Revisions, Trademark Rules of Practice, Annual Indices, and all other patent and trademark publications.

The Superintendent of Documents advises that expiration notices are sent out approximately three months in advance of the expiration date. However, subscribers should not be dependent upon such notices. In the event that a notice is not received within two months of the expiration date, the subscriber should renew his subscription with the Superintendent of Documents and *attach a label* from the envelope in which he receives the gazette, together with a check covering the amount of the subscription.

All correspondence and inquiries concerning subscription services to patent and trademark related publications, and requests for reinstatement of subscriptions should be directed to:

Mr. C. A. LaBarre
Asst. Public Printer
Superintendent of Documents (SD)
Government Printing Office
Washington, D.C. 20401

This notice is effective with the publication date and supersedes the notice published on this subject in 939 O.G. 1, dated October 7, 1975.

RICHARD J. SHAKMAN,
Mar. 14, 1978. *Assistant Commissioner for Administration.*

[969 O.G. 2]

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(19) **Availability of Patent and Trademark Office Notices on a Subscription Basis**

Effective Mar. 3, 1981, a separate publication of a part of the *Official Gazette* to be entitled *Patent and Trademark Office Notices* will be made available on a subscription basis. This weekly periodical will contain all notices which appear in the Patent *Official Gazette* and the Trademark *Official Gazette*. Additionally, current information regarding the general date status of trademark and patent applications will be provided.

Depending on the postage rate that is preferred, the subscription price for this service is as shown below:

[1004 O.G. 11]

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(20) **Subscription Pricing Information**

The annual subscription prices on the following publications have been changed, as indicated below:

Title:	Official Gazette, Patent Section	
	First-class domestic mailing	$360.00
	Fourth-class domestic mailing	250.00
	Fourth-class foreign mailing	312.50
	Single copies each, domestic	6.50
	Single copies each, foreign	8.15
Title:	Official Gazette, Trademark Section	
	Domestic mailing	$115.00
	Foreign mailing	143.75
	Single copies each, domestic	3.25
	Single copies each, foreign	4.10
Title:	Patent and Trademark Office Notices	
	First-class domestic mailing	$ 55.00
	Second-class domestic mailing	37.00
	Second-class foreign mailing	46.25
	Single copies: not available	....

Foreign first-class mailing rates will be furnished upon request. Direct all inquiries and subscription requests to:

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

Checks for subscription orders should be made payable to Superintendent of Documents. If a Deposit Account with the Superintendent of Documents is to be used, please include the Deposit Account Number with the order.

RICHARD J. SHAKMAN,
Nov. 18, 1981. *Assistant Commissioner for Administration.*

[1013 Contents Page]

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(21) **Experiment with Four-Day Work Weeks for PTO Employees**

An experiment is underway at the Patent and Trademark Office with "compressed work schedules". Under the experiment many PTO employees, including many patent and trademark examiners, are working their 40 hour average work weeks in fewer than five days a week. These employees work 9 or 10 hours a day instead of 8 hours. Under a "4-10" plan, employees work 10 hours a day and have off one day each week. Under a "5-4/9" plan, employees work 9 hours a day and have a day off every other week. All employees are on duty on "core days", which are Tuesdays and Thursdays.

The experiment is scheduled to run through Mar. 1982. It complements the flexible working hours program announced in the *Official Gazette* in Jan. 1979 (978 O. G. 140) under which many employees have flexibility to begin their work days as early as 6:30 a.m. and end as late as 6:00 p.m., provided they are on duty during core hours, between 9:30 a.m. and 3:00 p.m.

The public hours of the Patent and Trademark Office which deal directly with the public are staffed to answer telephone calls and receive visitors during those hours. The Patent Public Search Room continues to operate from 8:00 a.m. to 8:00 p.m. The Trademark Public Search Room operates from 8:00 a.m. to 5:30 p.m.

Members of the public are reminded they should make appointments in advance when they wish to interview examiners.

SIDNEY A. DIAMOND,
Dec. 29, 1980. *Commissioner of Patents and Trademarks.*

[1002 O.G. 116]

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(22) **Rules Service Company Address Change**

The Patent and Trademark Office has been notified of a change in the address and telephone number of the Rules Service Company which publishes a looseleaf Rules of Practice in Patent and Trademark Cases with a revision service. The new address and telephone numbers are:

Rules Service Company
4341 Montgomery Avenue
Bethesda, Maryland 20014
(301) 656-4660

SIDNEY A. DIAMOND,
Apr. 7, 1980. *Commissioner of Patents and Trademarks.*

[994 O.G. 10]

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(23) **Defensive Publication Program**

A change in the numbering system of Defensive Publication documents will be implemented, effective with the issue of November 4, 1980.

The numbering system will be as follows:

T XXXX XX

Sequential Document Number

Official Gazette Volume Number

Document Category. "T" denotes Technical Disclosure

The numbering system as announced in 869 O.G. 687 remains in effect for the issues of December 16, 1969 through October 1980.

RICHARD J. SHAKMAN,
Sept. 2, 1980. *Assistant Commissioner for Administration.*

[998 O.G. 38]

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(24) **Forms Booklet Available**

A new publication titled "Patent and Trademark Forms Booklet" dated October 1979 is now available from the Superintendent of Documents. The price is $12.00 and the stock number is 003-004-00569-6.

The booklet contains forms for use by the public in both patent and trademark cases. The booklet is printed on 8 1/2 by 11 inch paper and is designed for use as a full size master copy for copying. It includes 52 English language forms (oaths, declarations, etc.) for use in patent cases, 69 non-English language forms for use under 37 CFR 1.69 situations in patent cases, 3 forms for use in international applications filed under the Patent Cooperation Treaty, and 70 forms for use in trademark cases.

Orders should be directed to:

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

SIDNEY A. DIAMOND,
Mar. 26, 1980. *Commissioner of Patents and Trademarks.*

[993 O.G. 26]

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(25) **Patent and Trademark Office Services**

The Patent and Trademark Office is making every effort to utilize its resources as effectively and efficiently as possible. However, delays in some services are being experienced. To improve services, the PTO is taking the following steps:

Beginning with the issue of January 1, 1980, the original formal drawing which is supplied by the patent applicant and is 8 1/2 by 14 inches (21.0 by 29.7 cm.) is being stored within the patented file in the Patent Search Division. This is a change from the earlier practice under which the drawing is stored in a separate location from the patent file wrappers. The new procedure will simplify obtaining the complete patented file. This procedure will be used for a three month trial period and then reevaluated for its effectiveness.

Effective December 3, 1979, sale of tokens and maintenance of all token operated photocopy and microfilm reader-printer equipment throughout the Patent and Trademark Office are being performed by a private contractor, T S Info Systems, Inc. (TSI). Improved quality and timeliness of copy service to the public are anticipated.

All token sales are made between the hours of 8:30 A.M. and 5:00 P.M. at the token sales booth in the Record Room located in Building CP-4. When purchasing tokens by check, please make the check payable to "TSI" rather than "Commissioner of Patents and Trademarks." Tokens will not be sold at the cashier's window in CP2.

Effective February 1, 1980, charges for tokens to PTO customer deposit accounts will no longer be accepted.

Effective immediately, no requests for new patent or trademark drawings will be accepted by the Patent and Trademark Office. New drawings will be prepared only for requests already received. All currently available drafting time and facilities are required to correct the backlog of drawings needing correction prior to issue. When this backlog has been eliminated, a notice will be issued to that effect and new drawings can again be prepared for the public.

Effective immediately, three additional special mail room boxes will be established in the PTO:

Box 4 will be used for all mail for the Office of Legislation and International Affairs.

Box 5 will be used for documents which are related to trademarks and for which *no fee* is required at the time of filing; e.g., amendments to applications and requests for extensions of time to file an opposition. For mail directed to the Trademark Trial and Appeal Board, put "Attention TTAB" on the envelope in addition to "Box 5."

Box 7 will be used for reissue applications which are involved in litigation and any subsequently filed papers for these applications.

Mail appropriately addressed will be sorted and forwarded on a more timely basis.

Applicants and other users of the PTO services can assist in improving the efficiency of office by doing the following:

Use the following special PTO box numbers for forwarding particular types of mail. The boxes should be used only for the specified purpose.

Box 2—Replenishment of funds in deposit accounts.

Box 4—Mail for the Office of Legislation and International Affairs.

Box 5—"No fee" mail related to trademarks.

Box 7—Reissue applications for patents involved in litigation and any subsequently filed papers for these applications.

Box 8—All papers for the Office of the Solicitor.

Box 9—Coupon orders for U.S. patent and trademark copies.

Box 10—Orders for certified copies of patent and trademark applications.

Box PCT—Mail related to applications filed under the Patent Cooperation Treaty.

Only that material for which the special box was established should be enclosed.

The special box numbers have been established to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded directly to the appropriate area without being opened. Therefore, if any documents other than the specified type identified for each box are addressed to that box, they will be delayed in reaching the appropriate area for which they were intended.

Envelopes should be addressed:

Box _____
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Consider the fact that some PTO services are experiencing delays, and allow sufficient lead time for services requested of the Office. Where possible, urgent items which require no fee should be hand delivered to the appropriate area.

Minimize the number of inquiries to the PTO regarding acknowledgment of receipt of applications, fee papers, orders for patent copies, etc.

Include a self addressed return post card with newly filed applications. The serial number assigned the application will be stamped on the post card, which will constitute the means by which the application can be identified.

Use commercial services for preparation of new patent and trademark application drawings.

On all papers which are filed in patent and trademark applications and are being sent to an examining group, include the appropriate identifying data, such as examining group number, examiner's name, and the number of the application paper to which the response is directed. The paper should also identify the type of document being presented (e.g., response to Office action #___, amendment, etc.). The name and telephone number of the individual representing the applicant also should appear on all papers.

These steps have been devised in an effort to minimize delays in services. We solicit the help and cooperation of the public.

SIDNEY A. DIAMOND,
Jan. 4, 1980. *Commissioner of Patents and Trademarks.*

[990 O.G. 184]

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(26) **Automated Search Experiments**

The United States Patent and Trademark Office (PTO) intends to carry out research and evaluation projects dealing with automated full-text searching of U.S. Patents.

To further this objective, the PTO has entered into an agreement with Mead Data Central to provide the PTO access to and support for the use of the LEXIS full-text system. Using that system, the PTO will test and evaluate the effectiveness of searching the full text of over 50,000 U.S. patents. As part of this experiment, the PTO will furnish to Mead Data Central a special compilation of tapes from an extensive library of computer tapes containing the full text of U.S. patents from 1970 to the present.

The PTO would welcome multiple experiments using the same or similar techniques and/or technology as Mead Data Central, and thus, the PTO is willing to enter into the same agreement, or a similar agreement on mutually agreeable terms, with any other responsible party, within 18 months from the date of this notice.

Additional information regarding this matter may be obtained from:

Donald P. Stein, Director
Office of Search Systems
U.S. Patent & Trademark Office
Washington, D.C. 20231
TEL: 703-557-3763

GERALD J. MOSSINGHOFF,
Aug. 3, 1981 *Commissioner of Patents and Trademarks.*

[1010 O.G. 3]

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(27) **Availability of U.S. Patent Classification Microfilms**

The Patent and Trademark Office is discontinuing publication of two patent classification microfilms previously offered to the public through the National Technical Information Service. These microfilms are the U.S. Patent Classification—Numeric Listing, which provides users with the original and all cross-reference classifications for individual patents in ascending patent number sequence, and the U.S. Patent Classification—Subclass Listing, which consists of listings of all patent numbers classified into each of the classes and subclasses of the U.S. patent classification, both as original and cross-reference entries. Updated editions of these microfilms will in the future be published by Research Publications, Inc., 12 Lunar Dr., Woodbridge, Conn. 06525, Telephone (203) 397-2600. Persons interested in obtaining new editions of either of these microfilms may contact that company.

RENE D. TEGTMEYER,
Aug. 14, 1981. *Assistant Commissioner for Patents.*

[1010 O.G. 15]

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(28) **Sale of Copies of Reexamination Requests**

Copies of reexamination requests, all cited references, and the file wrapper and contents of the patent file for which reexamination is requested are available at a charge of $0.30 per page. Orders for such copies must indicate the control number assigned the reexamination request. Orders should be addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, Attention: Customer Services Division.

GERALD J. MOSSINGHOFF,
July 31, 1981 *Commissioner of Patents and Trademarks.*

[1010 O.G. 4]

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(29) **Availability of Concordances Between the United States Patent Classification and the International Patent Classification**

The Patent and Trademark Office announces that the 4th Edition of the Concordance which relates the U.S. Patent Classification (as revised to Apr. 9, 1979) to the Third Edition of the International Patent Classification, is now again available for sale by the U.S. Government Printing Office. Inquiries should be directed to:

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402
(Stock Number 003-004-00562-9) (Cost $6.50)

Also, a Reverse Concordance, which is the opposite of the above mentioned Concordance, is now available which relates the International Patent Classification to the U.S. Patent Classification. This Reverse Concor-

dance will not be published, but is now available for loan to interested parties for copying at their own expense.

The loan copy, which consists of 517 pages, may be obtained by contacting:

Office of International Patent Classification
Crystal Square, Bldg. 4, Room 108
c/o Commissioner of Patents and Trademarks
Washington, D.C. 20231
Tel.: (703) 557-3756

RENE D. TEGTMEYER,
Nov. 17, 1981. *Assistant Commissioner for Patents.*

[1013 O.G. 36]

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(30) **Simultaneous Issue of Patents**

Applicants and their attorneys who desire the simultaneous issue of allowed applications must submit the request to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231
Attention: Office of Publications
CP-2, Room 5C26

The request must contain the following information about *each* allowed application for which simultaneous issue is requested:

(1) serial number
(2) filing date
(3) name(s) of inventor(s)
(4) title of invention
(5) date of allowance

Separate copies of the request must accompany *each* Issue Fee Transmittal (PTO-85b).

Questions concerning this practice may be directed to Mr. Stanley J. Bania, Director, Office of Publications, Area Code (703) 557-3794.

RICHARD J. SHAKMAN,
Aug. 25, 1978. *Assistant Commissioner for Administration.*

[974 O.G. 16]

RECORDS AND FILES

(31) **Assignee Names**

Effective April 1, 1976, only the first appearing name of an assignee will be printed on the patent where multiple names for the *same* party are identified on the Base Issue Fee Transmittal form, POL-85b. Such multiple names may occur when both a legal name and an "also known as" or "doing business as" name is also included. This printing practice will not, however, affect the existing practice of recording assignments with the Office in the Assignment Division. The assignee entry on form POL-85b should still be completed to indicate the assignment data as recorded in the Office. For example, the assignment filed in the Office and therefore the POL-85b assignee entry might read "Smith Company doing business as (d.b.a.) Jones Company." The assignee entry on the printed patent will read "Smith Company."

For purposes of compiling and publishing the 1976 Annual Index of Patentees, this change will be retroactive to patents issuing on January 6, 1976.

RICHARD J. SHAKMAN,
Dec. 17, 1975. *Assistant Commissioner for Administration.*

[942 O.G. 186]

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(32) **Submission of Uniform Assignee Names on the Issue Fee Payment Form PTOL-85b**

The Patent and Trademark Office is experiencing problems when computer-sorting assignee names for the Patentee Index because of the non-uniform use of the names of certain companies and corporations on the issue fee payment form PTOL-85b. The use of different spellings or nomenclature for the same company requires the Office to expend time and effort to determine whether the various name forms are in fact for the same company. If such inconsistencies are not corrected, patents to the same company will appear in different locations in the Patentee Index. An example of inconsistent use is "ABC Company, Ltd." and "ABC Co., Limited."

Therefore, persons who list assignee names on issue fee payment form PTOL-85b should ensure that the same company name form is used for all patents issuing to a particular company.

RICHARD J. SHAKMAN,
Nov. 17, 1977. *Assistant Commissioner for Administration.*

[965 O.G. 8]

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(33) **Title of Invention Carried on Office Records**

The Patent and Trademark Office is experiencing an increased incidence in the number of newly filed applications in which the title of the invention is inconsistent within the papers. This has resulted in applicants requesting correction of the official filing receipt in many instances to indicate the title preferred by applicants.

Hereafter, whenever the title of the invention appears inconsistent within the papers of a newly filed application for patent, the records of the Office will carry the title as indicated on the first page of the specification and no corrected filing receipt will be issued to indicate another title. Note that 37 CFR 1.72(a) indicates that the title of the invention should appear as a heading on the first page of the specification.

It should also be noted that applicant may amend the title under 37 CFR 1.115 if any changes are subsequently desired before issuance of a patent.

BRADFORD R. HUTHER,
Aug. 31, 1977. *Acting Assistant Commissioner for Administration.*

[962 O.G. 23]

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(34) **Revised Patent Application Filing Receipt**

As a part of the new automated patent application information system, a revised Filing Receipt will be put into use in June 1979. The major modification is a change in size from the current 3 x 5 inch size to a larger 8 1/2 x 11 inch size. It should be noted that this change is consonant with the recently announced, government-wide policy to use 8 1/2 x 11 inch paper.

The same information currently appearing on the Filing Receipt form will be retained on the revised form. In addition, all information supplied by applicant relating to prior domestic, foreign and PCT international applications will be printed on the Receipt. Applicants are requested to verify all of the data printed on the Receipt and notify the Patent and Trademark Office of any errors. Such notification should be directed to the attention of the Application Division.

RICHARD J. SHAKMAN,
May 14, 1979. *Assistant Commissioner for Administration.*

[983 O.G. 2]

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(35) **New Security Procedure**

A Security Task Force, which was established in mid-1978, submitted a number of recommendations for improvements in the security of Patent and Trademark Office personnel and government property.

One recommendation that we adopted requires that either an employee building pass, user pass, or visitor pass be worn by each person in the Patent and Trademark Office in a manner so as to be visible at all times when the person is using Patent and Trademark Office facilities. This procedure will permit immediate visual recognition of all persons authorized to use our facilities. User and visitor passes may be obtained from the Reception-

ist, Public Search Room, Crystal Plaza Building 3, Room 1A03.

Effective upon publication of this notice, all persons will be required to comply with this procedure. Failure to do so may result in denial of the use of our facilities.

DONALD W. BANNER,
June 4, 1979. *Commissioner of Patents and Trademarks.*

[983 O.G. 25]

(36) New System To Monitor Patent Applications

During this summer the Patent and Trademark Office will begin implementation of a new office-wide computer system, the Patent Application Locator and Monitor System (PALM 3), for monitoring the location and status of pending patent applications. The system will also have the ability to print data on certain form letters such as the Notice of Allowance, using computer-controlled printers located in the Examining Groups. This will permit the Notice of Allowance to be printed and mailed by the Groups shortly after the Examiner has decided that an application is in condition for allowance. Under the new system, the Notice of Allowance will be mailed prior to completion of final issue revision by the Group clerical staff. In those applications where an Examiner's Amendment is required, it will normally be mailed as an attachment to the Notice of Allowance.

When existing printing backlogs have been eliminated, this accelerated mailing should reduce the time between allowance by the examiner and issuance of the patent grant in most cases. The nature and/or extent of the revisions or processing requirements subsequent to mailing of the Notice of Allowance may result in little or no reduction in the time required for the printing of a few patents. In addition, it is possible that, as a result of this additional processing, withdrawal or correction of the Notice for a given application may be required. For instance, prosecution might be reopened as a result of the Quality Review Program. In situations where the Base Issue Fee has been paid and the Notice of Allowance is subsequently withdrawn, the applicant may request that a refund be made or that the fee be credited to a Deposit Account.

Applicants will continue to receive a three part Notice of Allowance packet, but, as a result of automated printing, the Notice will be produced in a slightly revised format. This new format will have the following application data printed thereon:

—Serial Number
—Filing Date
—Total Claims Allowed
—Date of Mailing
—Examiner Name and Group Art Unit
—First Named Applicant
—Title of the Invention
—Base Issue Fee Due (Utility Applications Only)
—Attorney's Docket Number
—Class and Subclass Where Issued

Copy (a) of the new Notice of Allowance will be used as applicant's record copy in the current manner. Copy (b) will continue to be used as a transmittal for the fee with copy (c) required when a charge to a deposit account is authorized. The new version of copy (c) will also have a section to notify the Office of a change in an inventor's address. Note that this address change need not be signed by the inventor. This procedure eliminates the need for the separate Inventor's Address Change form (PTOL-231) now in use.

One other change to current practice will also be implemented as a result of the new system. Beginning with patents issuing in the late fall of this year, advance orders for patent copies will only be sent to the correspondence address of record in the application. This practice will permit computer generation of mailing labels for the orders and thereby eliminate the need for the separate, pink Advance Order form (PTO-721) now in use. Requests for advance orders will now be made in a special section of copy (b) of the Notice of Allowance. During the transition from the old order method to the new, it will be necessary to send some advance orders to the correspondence address of record in the application rather than some other address as has been requested on an earlier submitted Advance Order Form.

While the major impacts on the public will be limited to those discussed above, one other minor matter should be mentioned. It is anticipated that, due to the absence of data in the master data base, some information occasionally may not be printed on the Notice of Allowance or on other form correspondence. However, this does not necessarily mean that a corrected Notice or form letter is required. Furthermore, since the data base is not used for printing of the patent grant, the missing information should appear on the final issued patent if it is in the application file wrapper. This problem is expected to diminish as the implementation of the system proceeds and the data base becomes more complete. The cooperation of applicants and their representatives during this system implementation is sincerely appreciated by the Patent and Trademark Office.

SIDNEY A. DIAMOND,
June 16, 1980. *Commissioner of Patents and Trademarks.*

[997 O.G. 9]

FEES AND PAYMENT OF MONEY

(37) Fees in Connection With Amendments to Patent Applications

This notice supplements the Notice of September 10, 1965, 818 O.G. 1207, September 28, 1965, relating to the administration of the act of July 24, 1965, Public Law 89-83, increasing certain fees payable to the United States Patent Office.

That act provides for the payment of additional fees on presentation of certain claims during the prosecution of applications. This provision applies in the case of applications filed on or after October 25, 1965, the effective date of the act. In such cases, when any amendment is filed which presents additional claims over the total number covered by fees previously paid, it should be accompanied by any additional fees due.

As in the case of claims presented after an application is filed and before first action, described in the Notice of September 10, 1965, when independent claims are subsequently presented so that the number of uncanceled independent claims in the application as amended exceeds the number of such claims paid for, an additional fee of $10 is due for each such additional claim. Similarly, an additional fee of $2 is due for each claim added in excess of the number of uncanceled claims, independent or dependent, already paid for.

Treatment of Amendments Unaccompanied by Fees Due

Amendments filed during and after the prosecution of an application and not accompanied by the entire fee due upon such filing will be treated as follows:

If such an amendment is filed in reply to an Office action it will be regarded as not being fully responsive thereto and the practice set forth in section 714.03 of the Manual of Patent Examining Procedure will be followed, care being taken to avoid any abuse of this practice by attorneys as, for example, by habitual submission of such amendments without fees or with insufficient fees.

If an amendment which is not filed in response to an Office action is of such a nature as to require a fee and is not accompanied by the full fee required, it will not be entered and the applicant will be so advised.

Amendment During Interference

An amendment filed in connection with a motion to add counts to an interference (Rule 233) must be accompanied by the claim or claims to be added and with the appropriate fees, if any, which would be due if the amendments were to be entered. It may be that the amendments will never be entered. Only upon the

granting of the motion is it necessary for the other party or parties to present the claims, but the fees must be paid whenever presented.

Claims which have been submitted in response to a suggestion by the Office for inclusion in an application must be accompanied by the fee due, if any.

Amendment After Requirement for Restriction

After a requirement for restriction or election of species, nonelected claims will be included in determining the fees due in connection with a subsequent amendment unless such claims are canceled.

Refunds

Money paid in excess or by mistake in connection with an amendment will be refunded in the usual manner.

Amendments affecting the claims cannot serve as the basis for granting any refund.

Money paid in connection with the filing of a proposed amendment will not be refunded by reason of the nonentry of the amendment.

EDWARD J. BRENNER,
Jan. 13, 1966. *Commissioner of Patents.*

[823 O.G. 814]

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(38) **Deposit Accounts—Statutory Fee Charges**

Beginning on May 1, 1966, and until further notice, statutory fees, including filing fees for patent, design, and trademark applications, issue fees, appeal fees and opposition, cancellation and petition fees may be charged against the deposit accounts provided for by Rule 25(a) of the Rules of Practice in patent cases. During this period the prohibition of Rule 25(b) against such charges will be suspended.

In view of the facts that these fees are indispensable parts of the actions to which they relate and that the charging of a fee against an account which does not contain sufficient funds to cover it cannot be regarded as a payment of the fee, it is evident that the overdrawing of a deposit account may result in the loss of a vital date and may also impose a substantial burden on the Patent Office in making appropriate correction of its records. It is, therefore, necessary that effective steps be taken to avoid such overdrafts, as follows:

Checks of all accounts will be made periodically, and if any account is found to have been overdrawn, it will be immediately removed from the active accounts and no further drafts on it will be honored. Prompt payment of the outstanding balance will be required and the depositor or his attorney may be called on for an itemized statement identifying all statutory fees charged against the account during the period in question in order that it may be ascertained whether any previously granted date should be withdrawn.

It is emphasized that the success of the procedure outlined above depends upon the maintenance of a sufficient balance in deposit accounts at all times to meet any charges made against them. The Office must, therefore, strictly refuse to permit any depositor who has once overdrawn his account to maintain such an account in the future and in the event that any substantial number of overdrafts occurs it may be necessary to reestablish the prohibition of Rule 25(b) against charging statutory fees against deposit accounts.

Accordingly, effective May 1, 1966, the requirement of Rule 25(a) that an amount sufficient to cover all charges made against an account must always be on deposit will be strictly enforced, regardless of whether any fee is included in such charges and where this requirement is not complied with the account involved will be removed from the active accounts.

EDWARD J. BRENNER,
Feb. 23, 1966. *Commissioner.*

[824 O.G. 1200]

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(39) **Practice in the Use of Accounts for Payment of Statutory Fees**

In the *Official Gazettes* of March 15, 22, and 29, there appeared copies of an announcement by the Commissioner providing for a trial use of accounts established under Rule 25 for the payment of statutory fees. A number of questions have come up in connection with the use of accounts in the payment of these fees prescribed by Public Law 89-83 and, in the interest of uniform practice, publication of a statement is warranted.

A general direction by an applicant or attorney to charge to an account these fees as they arise in any application prosecuted by the applicant, the attorney, or the firm will not be effective for such a purpose. Authority to make charges will be limited to a particular application.

A separate direction to charge shall be filed for each fee. Each such direction to charge a fee shall be transmitted on a separate sheet of paper and, in the case of fees based on modification of claims shall include the best estimate of the fee due. Failure to include such an estimate provides the basis for a refusal to enter any amendment transmitted therewith, as an incomplete response. Where variable fees are involved inclusion of a direction to charge or credit a deficiency or overpayment would appear appropriate.

An issue fee will not be charged to an account until a notice of allowance has been forwarded and a reply to that notice received.

For the purposes of determining the fee due the Patent Office, a claim will be treated as dependent if it contains reference to one other claim in the application. A claim determined to be dependent by this test will be entered if the fee paid reflects this determination. This does not, however, prevent the rejection of such a claim as improper, if, in fact, it is not a dependent claim.

EDWARD J. BRENNER,
Apr. 12, 1966. *Commissioner of Patents.*

[825 O.G. 1183]

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(40) **Deposit Accounts**

The practice instituted on May 1, 1966, pursuant to the notice of February 23, 1966 (824 O.G. 1200), whereby statutory fees may be charged against deposit accounts, and such accounts are closed if overdrawn, has resulted in certain difficulties for the Patent Office and deposit account holders. It has been decided therefore to modify that practice as indicated below.

As was pointed out in that notice, the charging of a fee against an overdrawn account cannot be considered as payment of the fee until a proper balance is restored or payment is made in some other way. Accordingly, deposit account holders who charge such fees must assume the risk of losing vital dates if they do not maintain a proper balance in their accounts at all times.

Apart from this, however, the overdrawing of an account places a burden on the Patent Office, particularly where a number of items are charged after the overdraft occurs, and it is appropriate that those who are responsible for causing such a condition should bear the cost of correcting it. In view of this fact, and of the hardship frequently caused if an account is permanently closed, the practice of closing deposit accounts merely because they are overdrawn will be discontinued, effective August 1, 1966. In lieu thereof an overdrawn account will be immediately suspended and no charges will be accepted against it until a proper balance is restored, together with a payment of ten dollars to cover the work done by the Patent Office incident to suspending and reinstating the account and dealing with charges which may have been made in the meantime. It is expected, however, that reasonable precautions will be taken in all cases to avoid overdrafts, and if an account is suspended repeatedly it will be necessary to close it.

Similarly, because of the burden placed on the Patent Office incident to the operation of deposit accounts, a charge of ten dollars will be made for opening each new account.

EDWARD J. BRENNER,

June 23, 1966. *Commissioner.*

[828 O.G. 377]

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(41) Payment of Additional Fees for Claims

Section 41(a) 1 of Title 35 U.S. Code, provides that the Commissioner shall charge "On filing each application for an original patent, except in design cases, $65, in addition on filing or on presentation at any other time, $10 for each claim in independent form which is in excess of one, and $2, for each claim (whether independent or dependent) which is in excess of ten. . . . Errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner."

The Office accords filing dates to applications with insufficient fees provided the basic $65.00 filing fee is present. In such cases a notice is mailed requiring that the balance of the fee be paid within two months from the notification of the deficiency.

Occasionally applications contain informal claims that counsel feels should not be present. However, since alteration after execution and before filing is prohibited and could result in the application being stricken from the files, such applications must be filed in the form in which they are received from applicants. In the past the Office has charged fees for these informal claims, resulting in an unnecessary financial burden on applicants. In the future, applicants will be permitted to file with the application a preliminary amendment limited to cancellation of such claims, which will diminish the number of claims to be considered in calculating the filing fee to be paid. Any other changes should be the suoject of a separate amendment.

On the other hand, if a preliminary amendment cancelling such claims does not accompany the application at the time the application is filed, the notification of the fee deficiency will inform applicant of his option of correcting the error by (1) paying the additional fee, or (2) filing an amendment cancelling claims, thereby reducing the number of claims to be considered in calculating the fee. However, it should be noted that once the fee for claims is paid, no refund will be made even though applicant later decides that certain claims are informal or otherwise unnecessary.

This change, which will become effective December 1, 1978, should benefit both applicants and the Office. It will alleviate applicants' financial burden and will also result in more efficient examination.

DONALD W. BANNER,
Nov. 9, 1978. *Commissioner of Patents and Trademarks.*

[977 O.G. 8]

DEPARTMENT OF COMMERCE

(42) Patent and Trademark Office

37 CFR Part 1

Advance Notice of Proposed Rulemaking for Implementing the Reexamination and Fee Provisions of Public Law 96-517 (H.R. 6933)

Agency: Patent and Trademark Office/Commerce

Action: Advance notice of proposed rulemaking

Summary: The purpose of this advance notice of proposed rulemaking is to advise the public of the Office's current plans for implementing the reexamination and fee provisions of Public Law 96-517, enacted on Dec. 12, 1980. The reexamination provisions of this new law, including reexamination fees, will take effect on July 1, 1981. New patent and trademark fees, other than reexamination fees, must be established no later than Oct. 1, 1982.

Insofar as the reexamination provisions are concerned, it is expected that proposed rules to implement them will be published in the Federal Register by the middle of Jan. 1981, with publication to follow in the Official Gazette as soon thereafter as possible. Assuming the proposed rules are published by the middle of January, a public hearing on the proposed rules could be held as early as the first half of Apr. 1981, with the rules being completed and promulgated thereafter.

It will be some time before the Office is ready to publish proposed rules implementing the fee provisions, but the same procedure will be followed as for the reexamination rules. A public hearing will be held following publication of the proposed rules. Completion and promulgation of the rules will follow both an adequate comment period and the public hearing.

Address: Persons wishing to submit written comments before the proposed rules are published should address them to Michael K. Kirk, Director, Office of Legislation and International Affairs, whose address is: Box 4, Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information: New fees under the provisions of Public Law 96-517 will not become effective until appropriate rules are promulgated. Until that time, which the Office presently anticipates will be no earlier than July 1, 1981, the present fee provisions will remain in effect. Maintenance fees will be required for any patent actually applied for on or after Dec. 12, 1980, whether or not the patent is entitled to the benefit of an earlier filing date under section 120 of title 35, U.S.C. or a right of priority under section 119 of title 35, U.S.C. The amounts of maintenance fees have not yet been set.

The text of Public Law 96-517 will be published shortly in the Official Gazette.

This advance notice of proposed rulemaking is issued under the authority of 35 U.S.C.§6 and 41.

SIDNEY A. DIAMOND,
Dec. 19, 1980. *Commissioner of Patents and Trademarks.*

JORDAN J. BARUCH,
Jan. 8, 1981. *Assistant Secretary for Productivity, Technology and Innovation.*

[1003 O.G. 28]

APPLICATION CONTENT

(43) Use of Metric System of Measurements in Patent Applications

In order to minimize the necessity in the future for converting dimensions given in the English system of measurements to the metric system of measurements when using printed patents as research and prior art search documents, all patent applicants are strongly encouraged to use either (1) only metric (S.I.) units, or (2) English units together with their metric system equivalents, when describing their inventions in the specifications of patent applications. This practice, however, is not being made mandatory at this time.

The initials S.I. stand for "Systeme International d'Unites," the French name for the International System of Units, a modernized metric system adopted in 1960 by the International General Conference of Weights and Measures based on precise unit measurements made possible by modern technology.

This request is made as part of the long-range program for conversion to metric units currently being conducted by the Federal Government.

Publications dealing with the metric system are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 and the American National Standards Institute, 1430 Broadway, New York, N.Y. 10018.

C. MARSHALL DANN,
July 1, 1974. *Commissioner of Patents.*

[924 O.G. 1104]

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(44) Filing of Non-English Language Applications

This notice is in response to inquiries regarding the filing of applications in a language other than English. The

Office has received a few such applications in the past in emergency situations where the filing of a non-English language specification was the only possibility of saving a foreign priority date or preventing the running of a statutory bar. In such situations the Office practice has been to accord the application a filing date if it includes all of the component parts required by 35 U.S.C. 111, and to require applicant to submit a verified translation of the previously filed application within two months.

In view of the inquiries received, it is considered appropriate that the Office clarify and publicize its practice in this area to avoid misunderstandings.

Accordingly, beginning February 1, 1976, the Office will accord a filing date to an application meeting the requirements of 35 U.S.C. 111 even though some or all of the application papers, including the written description and the claims, is in a language other than English and hence does not comply with 37 CFR 1.52, *provided:*

(1) the oath or declaration is signed and physically attached to the specification and claims to which it refers; and

(2) the application papers are accompanied by a statement, in English, from the applicant, his attorney or agent, certifying that it has been considered necessary to file the non-English language application in order to save a foreign priority date or prevent the running of a statutory bar.

A verified English translation of the non-English language papers should either accompany the application papers or be filed in the Office no later than two months after a notice requesting the translation has been mailed by the Office.

A subsequently filed verified English translation must contain the complete identifying data for the application in order to permit prompt association with the papers initially filed. Accordingly, it is strongly recommended that the original application papers be accompanied by a cover letter and a self-addressed return post card, each containing the following identifying data in English: (*a*) applicant's name(s); (*b*) title of invention; (*c*) number of pages of specifications, claims, and sheets of drawings; (*d*) whether oath or declaration was filed and (*e*) amount and manner of paying the filing fee.

The translation must be a literal translation verified as such by the translator, and must be accompanied by a signed request from the applicant, his attorney or agent, asking that the verified English translation be used as the copy for examination purposes in the Office. If the verified English translation does not conform to idiomatic English and United States practice it should be accompanied by a preliminary amendment making the necessary changes without the introduction of new matter prohibited by 35 U.S.C. 132. In the event the verified literal translation is not timely filed in the Office the application will be regarded as abandoned.

It should be recognized that this practice is intended for emergency situations to prevent loss of valuable rights and should not be routinely used for filing applications. There are at least two reasons why this should not be used on a routine basis. First, there are obvious dangers to applicant and the public if he fails to obtain a correct literal translation. Second, the filing of a large number of applications under the procedure will create significant administrative burdens on the Office.

The practice will be closely monitored to determine whether or not it should be continued.

C. MARSHALL DANN,
Dec. 31, 1975. *Commissioner of Patents and Trademarks.*

[942 O.G. 1552]

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(45) Filing of Copies of Patent Applications

Beginning on October 1, 1978, the Office will accord a filing date to facsimile or other reproduced copies of United States national patent applications meeting the requirement of 35 U.S.C. 111, *provided:*

(1) the application was properly executed by the inventor(s) prior to transmission of the copy.

(2) the copy filed is a complete copy and bears a reproduction of applicant's signature, and

(3) the originally signed application is filed no later than two months after the facsimile or other reproduced copy is filed.

Authority for this practice is found in 35 U.S.C. 26 as interpreted by the District Court decisions *Neergaard* v. *Dann,* Civil Action No. 76-536. December 20, 1976 (D.D.C.) and *Dietzel, et al.* v. *Commissioner of Patents and Trademarks,* Civil Action No. 75-0298, December 22, 1976 (D.D.C.).

In order to ensure prompt association with the copy of the application initially filed it is strongly recommended that the subsequently filed original application be accompanied by a cover letter signed by the applicant or the attorney or agent averring it is the original of the earlier filed facsimile application, identifying the application by applicant's name, title of invention, date of initial filing and serial number, if known.

It should be recognized that this practice is intended for emergency situations to prevent loss of valuable rights and should not be used routinely for filing applications.

The above procedure does not apply to international applications filed under the Patent Cooperation Treaty since procedures to cover unsigned international applications are already provided for in PCT Article 14(1)(a)(i) and (b) and PCT Rule 26.2.

DONALD W. BANNER,
Aug. 28, 1978. *Commissioner of Patents and Trademarks.*

[974 O.G. 14]

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(46) Graphical Illustrations in the Specification

For convenience many applicants have been including graphs or other types of graphical illustrations in the text portion of the specification. These illustrations do not come within the purview of 37 C.F.R. 1.58 which permits tables and chemical and mathematical formulas in the specification in lieu of formal drawings. Frequently, these graphical illustrations do not have satisfactory reproduction characteristics. Moreover, these reproductions are generally less than satisfactory due to the fact that the illustrations are usually reduced in size in order to fit a column of the printed patent page. Accordingly, effective immediately, graphs and graphical type illustrations in the specification will be objected to under 37 C.F.R. 1.58(a) and drawings pursuant to 37 C.F.R. 1.81 will be required.

WILLIAM FELDMAN,
Jan. 12, 1978. *Deputy Assistant Commissioner for Patents.*

[967 O.G. 2]

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(47) Multiple Dependent Claims and New Drawing Filing Requirements

Introduction

On January 24, 1978, Public Law 94-131 (pages 108–115 of "Patent Laws," August 1976 issue) and the Patent Cooperation Treaty came into force. This public law amends the patent statute, Title 35, United States Code, by providing for procedures and requirements set forth in the Patent Cooperation Treaty. Some of these statutory amendments also effect the laws governing the processing and examination of regular United States national applications filed on and after January 24, 1978.

The amendments of the patent law which will affect *U.S. patent applications filed on and after January 24, 1978,* relate to two elements of the patent application: the claims and the drawings. With regard to claims, the amendments to 35 U.S.C. 41 and 112 provide for multiple dependent claims in accordance with PCT Rule 6.4. With regard to drawings, the amendment to 35 U.S.C. 113 changes the requirements for filing drawings in or-

der to obtain a filing date in accordance with PCT Article 7.

Purpose

This memorandum establishes in more detail the new procedures required by the amended statute. Any questions concerning these instructions may be directed to either Mary Turowski (extension 7-3776) in the administration area or Louis Maassel (extension 7-3070) in the examining area.

Revised 37 CFR sections 1.75(c), (f) and (g); and 1.81 and 1.83(c) were published in the *Official Gazette* of February 21, 1978.

Multiple Dependent Claims

Generally, a multiple dependent claim is a dependent claim which refers back in the alternative to more than one preceding independent or dependent claim.

The second paragraph of 35 U.S.C. section 112 has been revised in view of the multiple dependent claim practice introduced by the Patent Cooperation Treaty. Thus, section 112 authorizes multiple dependent claims, as long as they are in the alternative form (e.g., "A machine according to claims 3 *or* 4, further comprising . . ."). Cumulative claiming (e.g., "A machine according to claims 3 *and* 4, further comprising . . .") is *not* permitted. A multiple dependent claim may refer in the alternative to only one set of claims. A claim such as "A device as in claims 1, 2, 3 or 4, made by a process of claims 5, 6, 7 or 8" is improper. Section 112 allows reference to only a particular claim. Furthermore, a multiple dependent claim may *not* serve as a basis for any other multiple dependent claim, either directly or indirectly. These limitations help to avoid undue confusion in determining how many prior claims are actualiy referred to in a multiple dependent claim.

The amendment of the second paragraph of section 112 further clarifies that the limitations or elements of each claim incorporated by reference into a multiple dependent claim must be considered separately. Thus, a multiple dependent claim, as such, does not contain all the limitations of all the alternative claims to which it refers, but rather, contains in any one embodiment only those limitations of the particular claim referred to for the embodiment under consideration. Hence, a multiple dependent claim must be considered in the same manner as a plurality of single dependent claims.

Restriction Practice

For restriction purposes, each embodiment of a multiple dependent claim will be considered in the same manner as a single dependent claim. Therefore, restriction may be required between the embodiments of a multiple dependent claim. Also, some embodiments of a multiple dependent claim may be held withdrawn while other embodiments are considered on their merits.

Handling of Multiple Dependent Claims by the Application Division

The Application Division will be responsible for verifying whether multiple dependent claims filed with the application are in proper alternative form, that they depend only upon prior independent and single dependent claims and also for calculating the amount of the filing fee. A new form, PTO-1360, has been designed to be used in conjunction with the current fee calculation form PTO-875.

Handling of Multiple Dependent Claims by the Examining Group Clerical Staff

The examining group clerical staff is responsible for verifying compliance with the statute and rules of multiple dependent claims added by amendment and for calculating the amount of any additional fees required. This calculation should be performed on form PTO-1360.

If a multiple dependent claim (or claims) is added in an amendment without the proper fee, the amendment will not be entered until the fee has been received. In view of the requirements for multiple dependent claims, no amendment containing new claims or changing the dependency of claims will be entered before checking whether the paid fees cover the costs of the amended claims. The applicant, or his attorney or agent, will usually be contacted to pay the additional fee in the same manner as currently in existence for such defects. Where a letter is written in insufficient fee situations, a copy of the multiple dependent claim fee calculation form PTO-1360 will be included for applicant's information.

Handling of Dependent Claims by the Examiner

Should any multiple dependent claim be in an application filed prior to January 24, 1978 or include a claim association or claim structure that violates any of the prohibitions, the claim will be objected to as not being in proper form as required by 37 CFR 1.75 in the next Office action. Such an improper claim will not be further treated on the merits.

When referring to a singular dependent claim or a single embodiment of a multiple dependent claim, as when making a rejection, such a claim or embodiment will be referred to by using the number of all of the claims involved in that claim or embodiment, starting with the highest. For example, if claim 2 was dependent on claim 1, the notations would be 2/1. If in the same application, claim 3 was independent and claim 4 was multiple dependent on claims 2 or 3, the notations would be 4/2/1 and 4/3. Furthermore, if claim 5 depended from claim 4, the notations would be 5/4/2/1 and 5/4/3. Each of these embodiments will be treated individually. It would be possible for claim 4/2/1 to be rejected under section 102 and claim 4/3 to be indicated as avoiding the prior art and being allowable if rewritten in independent form. A number of embodiments may be grouped together if there is a common ground of rejection, but it must be clear how each embodiment is treated.

A claim, such as claim 4, will not be allowed until all embodiments covered thereby are allowable. If an embodiment of a multiple dependent claim avoids the art while other embodiments are rejected over prior art, a statement will be made that that embodiment avoids the art and would be allowed if rewritten in separate dependent or independent form. Wording similar to the following may be used:

> "Embodiment ____ would be allowable if rewritten as a proper dependent or independent claim which contains only the limitations of this embodiment."

Calculation of Fees When Multiple Dependent Claims are Presented, Use of Form PTO–1360

To assist in the computation of the fees for multiple dependent claims, a separate "Multiple Dependent Claim Fee Calculation Sheet," form PTO-1360, has been designed for use with the current "Patent Application Fee Determination Record," form PTO-875. Form PTO-1360 will be placed in the file wrapper by the Application Division where multiple dependent claims are in the application as filed. If multiple dependent claims are not included upon filing, but are later added by amendment, the examining group clerical staff will place the form in the file wrapper. If there are multiple dependent claims in the application, the total number of independent and dependent claims for fee purposes will be calculated on form PTO-1360 and the total number of claims and number of independent claims will then be placed on form PTO-875 for final fee calculation purposes.

If at least $65 is included with the application on filing, but the total fee is insufficient, a "Notice of Insufficient Fee," form PTO-1094, is placed in the file wrapper by the Application Division as is currently done. The notice will be mailed by the examining group in accordance with established procedures.

Calculating Fees for Multiple Dependent Claims Proper Multiple Dependent Claims

Amended section 41(a) of title 35, U.S.C., provides that claims in multiple dependent form cannot be considered as single dependent claims for the purpose of calculating fees. Thus, a multiple depen-

dent claim would be considered to be that number of dependent claims to which it refers. Any proper claim depending directly or indirectly from a multiple dependent claim would also be considered as the same number of dependent claims as referred to in the multiple dependent claim from which it depends.

Improper Multiple Dependent Claim

If any multiple dependent claim is improper, Application Division may indicate that fact by placing an encircled numeral "1" in the "Dep. Claims" column of form PTO-1360. The fee for any improper multiple dependent claim, whether it is defective for not being in the alternative form or for being directly or indirectly dependent on a prior multiple dependent claim, will only be one, since only an objection to the form of such a claim will normally be made.

This procedure also greatly simplifies the calculation of fees. Any claim depending from an improper multiple dependent claim will also be considered to be improper and be counted as one dependent claim.

FEE CALCULATION EXAMPLE

Claim Number	
1	Independent
2	Dependent on claim 1
3	Dependent on claim 2
4	Dependent on claim 2 or 3
5	Dependent on claim 4
6	Dependent on claim 5
7	Dependent on claim 1 or 4
8	Dependent on claim 1 or 5
9	Dependent on claim 8
10	Independent
11	Dependent on claim 1 or 10
12	Dependent on claim 1 and 10

FORM PTO-1360 (2/79) U.S. DEPT. COMM. PAT. AND TRADEMARK OFF.

MULTIPLE DEPENDENT CLAIM FEE CALCULATION SHEET (FOR USE WITH FORM PTO-875)

	AS FILED		AFTER 1ST AMDT		AFTER 2ND AMDT	
	IND.	DEP.	IND.	DEP.	IND.	DEP.
1	1					
2		1				
3		1				
4		2				
5		2				
6		2				
7		(1)				
8		(1)				
9		(1)				
10	1					
11		2				
12		(1)				
TOTAL IND.	2					
TOTAL DEP.	14	↵		↵		↵
TOTAL CLAIMS	16					

Comments on Fee Calculation Example

Claim 1.–This is an independent claim; therefore, a numeral "1" is placed opposite claim number 1 in the "Ind." column.

Claim 2.–Since this is a claim dependent on a single independent claim, a numeral "1" is placed opposite claim number 2 in the "Dep." column.

Claim 3.–Claim 3 is also a single dependent claim, so a numeral "1" is placed in the "Dep." column.

Claim 4.–Claim 4 is a proper multiple dependent claim. It refers directly to two claims in the alternative, namely, claims 2 or 3. Therefore, a numeral "2" to indicate direct reference to two claims is placed in the "Dep." column opposite claim number 4.

Claim 5.–This claim is a singularly dependent claim depending from a multiple dependent claim. For fee calculation purposes, such a claim is counted as being that number of claims to which direct reference is made in the multiple dependent claim which it depends. In this case, the multiple dependent claim number 4 it depends from counts as 2 claims; therefore, claim 5 also counts as 2 claims. Accordingly, a numeral "2" is placed opposite claim number 5 in the "Dep." column.

Claim 6.–Claim 6 depends indirectly from a multiple dependent claim 4. Since claim 4 counts as 2 claims, claim 6 also counts as 2 dependent claims. Consequently, a numeral "2" is placed in the "Dep." column after claim 6.

Claim 7.–This claim is a multiple dependent claim since it refers to claims 1 or 4. However, as can be seen by looking at the "2" in the "Dep." column opposite claim 4, claim 7 directly depends from a multiple dependent claim. This practice is improper under 35 U.S.C. 112 and Rule 1.75(c). Following the procedure for calculating fees for improper multiple dependent claims, a numeral "1" is placed in the "Dep." column with a circle drawn around it to alert the examiner that the claim is improper.

Claim 8.–This claim is a multiple dependent claim since it refers to claims 1 or 5. However, since claim 5 depends from multiple dependent claim 4, claim 8 indirectly depends from multiple dependent claim 4 through claim 5. This practice is improper. See MULTIPLE DEPENDENT CLAIMS, paragraph 2, above. Consequently, a numeral "1" is placed in the dependent claim column with a circle drawn around it.

Claim 9.–Claim 9 is improper since it depends from an improper claim. If the base claim is in error, this error cannot be corrected by adding additional claims depending therefrom. Therefore, a numeral "1" with a circle around it is placed in the "Dep." column.

Claim 10.–Here again we have an independent claim which is always indicated with a numeral "1" in the "Ind." column opposite the claim number.

Claim 11.–This claim refers to two independent claims in the alternative. A numeral "2" is therefore placed in the "Dep." column opposite claim 11.

Claim 12.–Claim 12 is a dependent claim which refers to two claims in the conjunctive ("1 *and* 10") rather than in the alternative ("1 *or* 10"). This form is improper under 35 U.S.C. 112 and Rule 1.75(c). Accordingly, since claim 12 is improper, an encircled numeral "1" is placed in the "Dep." column opposite claim 12.

Calculation of Filing Fee

After the numbers of "Ind." and "Dep." claims are noted on form PTO-1360, each column is added. In this example., there are 2 independent claims and 14 dependent claims or a total of 16 claims. The number of independent and total claims can then be placed on form PTO-875 and the fee calculated. In this example, the total number of claims 16 minus 10 leaves 6, which is multiplied by $2 for an additional total claim fee of $12. The total number of independent claims in the example is 2, which minus 1 is 1, which times the $10 rate is $10. The total filing fee is therefore $65 + $12 + $10, or total of $87.

Drawing Requirements

Revised 35 U.S.C. 113 relaxes the previous require-

ments for submission of drawings on filing under certain conditions. The first sentence of 35 U.S.C. 113 does require a drawing to be submitted upon filing where such drawing is necessary for the understanding of the invention. In this situation the lack of a drawing renders the application incomplete and as such, the application cannot be given a filing date until the drawing is received. The second sentence of 35 U.S.C. 113 deals with the situation wherein a drawing is not necessary for the understanding of the invention but the case admits of illustration and no drawing was submitted on filing. The lack of the drawing in this situation does not render the application incomplete but rather is treated much in the same manner as an informality. The examiner should require such drawings in almost all such instances. Such drawings could be required during the processing of the application but do not have to be furnished at the time the application is filed. The applicant is allowed at least two months from the date of the letter requiring drawings to submit them.

Handling of Drawing Requirements Under the First Sentence of 35 U.S.C. 113

Under the revised provisions the Application Division examiner will continue to make the initial decision in all new applications as to whether a drawing is "necessary" under the first sentence of 35 U.S.C. 113.

If during examination an examiner feels that a filing date should not have been granted in an application because it does not contain drawings, the matter will be brought to the attention of the Supervisory Primary Examiner (SPE) for review. If the SPE decides that drawings are required to understand the subject matter of the invention, the SPE will return the application to the Application Division with a memorandum requesting cancellation of the filing date and identifying the subject matter required to be illustrated.

Handling of Drawing Requirements Under the Second Sentence of 35 U.S.C. 113

35 U.S.C. 113 also deals with the situation wherein the drawing is not necessary for the understanding of the invention, but the subject matter admits of illustration by a drawing and the applicant has not furnished a drawing. The lack of the drawing in this situation does not render the application incomplete but rather is treated as an informality. A filing date will be accorded with the original presentation of the papers, despite the absence of drawings. In these situations, a drawing or further illustration will normally be required by the examiner. This may be done either prior to examination in a separate letter or in the first Office action and may be handled in much the same manner as informal photocopy drawings are presently handled. The examiner should require drawings where appropriate as early as possible, since the possession of the drawing at that time would facilitate the examination process. A letter requiring drawings may contain wording similar to the following:

> "The examiner has decided that the subject matter of this applicaton admits of illustration by a drawing and that a drawing would facilitate the understanding of the subject matter disclosed. (Continue with a specific mention of those items of which drawings are desired.) Applicant is required to furnish a drawing under 37 CFR 1.81. (Incorporate in Office action or set two-month period for response.)"

The applicant will be given at least two months from the date of such requirement to submit drawings. If the requirement for drawings is included in an Office action, the time for supplying the drawings will be the same as the time of response to the Office action. Upon receipt of the drawing within the period set, the examiner will check the drawings for new matter. If new matter is included, the drawing will not be entered. It will be objected to as containing new matter. A new drawing without such new matter may be required if the examiner still feels a drawing is needed under 37 CFR 1.81 or 1.83. The examiner's decision would be reviewable by petition to the Commissioner under Rule 1.181. The decision on such a petition would be handled by the Group Director. If a drawing is not timely received in response to a letter from the examiner which requires a drawing, the application becomes abandoned for failure to respond.

Feb. 8, 1978. RENE D. TEGTMEYER,
Assistant Commissioner for Patents.

[968 O.G. 7]

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(48) Execution and Filing of Patent Applications

This notice is intended as a reminder that United States patent applications which have not been prepared and executed in accordance with the requirements of Title 35 of the United States Code and Title 37 of the Code of Federal Regulations may be denied a filing date as a complete application or may be, in appropriate circumstances, stricken from the files as having been improperly executed and/or filed. Although the statute and the rules have been in existence for many years, the Office continues to receive a number of applications which have been improperly executed and/or filed. Since the improper execution and/or filing of patent applications can ultimately result in a loss of rights it is appropriate to re-emphasize the importance of proper execution and filing.

Attention is invited to the fact that 35 U.S.C. 111 requires that "(t)he application must be signed by the applicant . . ." The same requirement appears in 37 CFR 1.57 which specifies that the signature to the oath or declaration "will be accepted as the signature to the application provided the oath or declaration . . . is attached to and refers to the specification and claims to which it applies. Otherwise the signature must appear at the end of the specification after the claims."

It should be carefully noted that the application "signed by the applicant" must be a *complete* application and cannot be simply an oath or declaration signed without the remainder of the application. As an example, it is improper for an applicant to sign an oath or declaration which is later attached to a specification and/or claims unless the specification is also signed after the claims. See 37 CFR 1.56(c) which provides that "(a)ny application may be stricken from the files if: (1) Signed or sworn to in blank, or without actual inspection by the applicant . . ."

The provisions of 35 U.S.C. 363 for filing an international application under the Patent Cooperation Treaty (PCT) which designates the United States and thereby has the effect of a regularly filed United States national application, except as provided in 35 U.S.C. 102(e), are somewhat different than the provisions of 35 U.S.C. 111. Under 35 U.S.C. 363 and PCT Article 11(1), the signature of the inventor is not required to obtain a filing date but must be submitted later. The oath or declaration requirements for an international application before the Patent and Trademark Office are set forth in 37 CFR 1.70.

The requirement that applicant sign "the application" also precludes alterations to the application after execution. See 37 CFR 1.52(c) which states that "(n)o . . . alterations are permissible after execution of the application papers." It is therefore necessary that the application, including the oath or declaration, be executed in the form in which it is intended to be filed since it is improper for anyone, including counsel, to complete or otherwise alter application papers, including the oath or declaration, after the applicant has executed the same. Section 1.56(c) provides that "(a)ny application may be stricken from the files if: . . . (2) Altered or partly filled in after being signed or sworn to."

In summary, it is emphasized that the application filed must be the application executed by the applicant and it is improper for anyone, including counsel, to alter, rewrite, or partly fill in any part of the application, including the oath or declaration, after execution by the appli-

cant. This reminder should particularly be brought to the attention of foreign applicants by their United States counsel since the United States law and practice in this area may differ from that in other countries. Hopefully, this Notice will serve as an adequate reminder so that applicants will not lose rights through the improper execution and/or filing of patent applications.

LUTRELLE F. PARKER,
Oct. 11, 1979. *Acting Commissioner of Patents and Trademarks.*

[988 O.G. 2]

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(49) Use of Symbol "0" in Patent Applications

The Greek letter Phi has long been used as a symbol in equations in all technical disciplines. It further has special uses which include the indication of an electrical phase or clocking signal as well as an angular measurement. The recognized symbols for the upper and lower case Greek Phi characters, however, do not appear on most typewriters. This apparently has led to the use of a symbol composed by first striking a zero key and then backspacing and striking the "cancel" or "slash" key to result in "0" which is an approximation of accepted symbols for the Greek character Phi. In other instances the symbol is composed using the upper or lower case letter "0" with the "cancel" or "slash" superimposed thereon by backspacing or is simply handwritten in a variety of styles. These expedients result in confusion because of the variety of type sizes and styles available on modern typewriters.

In recent years, the growth of data processing has seen the increasing use of this symbol ("0") as the standard representation of zero. The "slashed" or "cancelled zero" is used to indicate zero and avoid confusion with the upper case letter "O" in both text and drawings.

Thus, when the symbol "0" in one of its many variations, as discussed above, appears in patent applications being prepared for printing, confusion as to the intended meaning of the symbol arises. Those (such as examiners, attorneys, and applicants) working in the art can usually determine the intended meaning of this symbol because of their knowledge of the subject matter involved, but editors preparing these applications for printing have no such specialized knowledge and confusion arises as to which symbol to print. The result, at the very least, is delay until the intended meaning of the symbol can be ascertained.

Since the Office does not have the resources to conduct a technical editorial review of each application before printing, and in order to eliminate the problem of printing delays associated with the usage of these symbols, any questions about the intended symbol will be resolved by the editorial staff of the Office of Publications by printing the symbol "0" whenever that symbol is used by the applicant. Any Certificate of Correction necessitated by the above practice will be at the patentee's expense (37 CFR 1.323) because the intended symbol was not accurately presented by the Greek upper or lower case Phi letters (0, 0) in the patent application.

RICHARD J. SHAKMAN,
Dec. 20, 1978. *Assistant Commissioner for Administration.*

[978 O.G. 152]

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(50) U.S. Accession to Hague Convention Abolishing the Requirement of Legalization for Foreign Public Documents

On Oct. 15, 1981, the Hague "Convention Abolishing the Requirement of Legalization for Foreign Public Documents" entered into force between the United States and twenty-eight foreign countries that are parties to the Convention. The Convention applies to any document submitted to the United States Patent and Trademark Office for filing or recording, which is sworn to or acknowledged by a notary public in any one of the member countries. The Convention abolishes the certification of the authority of the notary public in a member country by a diplomatic or consular officer of the United States and substitutes certification by a special certificate, or apostille, executed by an officer of the member country. Accordingly, the Office will accept for filing or recording a document sworn to or acknowledged before a notary public in a member country if the document bears, or has appended to it, an apostille certifying the notary's authority. The requirement for a diplomatic or consular certificate, specified in 37 CFR 1.66 and note 1 of 37 CFR 3.45, will not apply to a document sworn to or acknowledged before a notary public in a member country if an apostille is used.

The member countries that are parties to the Convention are:

Austria	Italy	Spain
Bahamas	Japan	Suriname
Belgium	Lesotho	Swaziland
Botswana	Liechtenstein	Switzerland
Cyprus	Luxembourg	Tonga
Fiji	Malawi	U.K. of Great Britain and N. Ireland
France	Malta	
Germany, Fed. Rep. of	Mauritius	
Hungary	Netherlands	United States
Israel	Portugal	Yugoslavia
	Seychelles	

The Convention prescribes the following form for the apostille:

Model of certificate

The certificate will be in the form of a square with sides at least 9 centimetres long

APOSTILLE
(Convention de La Haye du Oct. 5, 1961)

1. Country: .....
This public document
2. has been signed by .....
3. acting in the capacity of .....
4. bears the seal/stamp of .....
.....

Certified

5. at ..... 6. the .....
7. by .....
8. No. .....
9. Seal/stamp: 10. Signature:
.....

GERALD J. MOSSINGHOFF,
Nov. 5, 1981. *Commissioner of Patents and Trademarks.*

[1013 O.G. 3]

EXAMINATION OF APPLICATIONS

(51) Examination of Claims For Patentability Under 35 U.S.C. 103

The purpose of this notice is to inform the public of the current Patent and Trademark Office policy concerning determinations of obviousness under 35 U.S.C. 103 in view of the recent Supreme Court decision in *Sakraida* v. *Ag Pro,* 189 USPQ 449 (1976).

The following text is a copy of a memorandum issued to all patent examining personnel relative to this topic. "A clarification of the policy of the Patent and Trademark Office in the examination of claims for patentability under 35 U.S.C. 103 seems in order at this time in view of the Supreme Court's decision in *Sakraida* v. *Ag Pro,* 189 USPQ 449 (decided April 20, 1976) which is similar to the Court's earlier decision in *Anderson's-Black Rock, Inc.* v. *Pavement Salvage Co.,* 163 USPQ 673 (de-

cided December 8, 1969). "Office policy has consistently been to follow *Graham* v. *John Deere Co.*, 148 USPQ 4559 (decided February 21, 1966) in the consideration and determination of obviousness under 35 U.S.C. 103. The three factual inquiries enunciated therein as a background for determining obviousness are as follows:

1. Determination of the scope and content of the prior art;
2. Ascertaining the differences between the prior art and the claims in issue; and
3. Resolving the level of ordinary skill in the pertinent art.

"Attention is directed to MPEP Section 706 for a more complete discussion of the application of the Graham test. "The Supreme Court reaffirmed and relied upon the Graham three-pronged test in its consideration and determination of obviousness in the fact situations presented in both the Ag Pro and Black Rock decisions. In each case, the Court went on to discuss whether the claimed combinations produced a 'new or different function' and 'a synergistic result,' but clearly decided whether the claimed inventions were unobvious 'on the basis of the three-way test in Graham. Nowhere in its decisions in those cases does the Court state that the 'new or different function' and 'synergistic result' tests supersede a finding of unobviousness or obviousness under the Graham test. "Accordingly, examiners should continue to apply the test for patentability under 35 U.S.C. 103 set forth in Graham. It should be noted that the Supreme Court's application of the Graham test to the fact circumstances in Ag Pro is somewhat stringent, as it was in Black Rock."

C. MARSHALL DANN,
July 8, 1976. *Commissioner of Patents & Trademarks.*

[949 O.G. 3]

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(52) **Claims Copied From Patents**

Applicants and their attorneys or agents are reminded of the requirement of Rule 205(b) (37 CFR 1.205(b)) of the Rules of Practice that "Where an applicant presents a claim copied or substantially copied from a patent, he must, at the time he presents the claim, identify the patent, give the number of the patented claim, and specifically apply the terms of the copied claim to his own disclosure, unless the claim is copied in response to a suggestion by the Office."

The requirement of Rule 205(b) (37 CFR 1.205(b)) applies to claims copied in an application at the time of filing as well as to claims copied in an amendment to a pending application. If an applicant, attorney, or agent presents a claim copied or substantially copied from a patent without complying with Rule 205(b) (37 CFR 1.205(b)) the examiner may be led into making an action different from what he would have made had he been in possession of all the facts. Therefore, failure to comply with Rule 205(b) (37 CFR 1.205(b)), when submitting a claim copied from a patent, may result in the issuance of an Order To Show Cause why the application should not be stricken from the files of the Patent Office. If a satisfactory answer is not filed within the period set in the Order it may be necessary to strike the application under Rule 56 (37 CFR 1.56).

This reminder is being published to emphasize to applicants and their attorneys or agents the importance of complying with the requirement of Rule 205(b) (37 CFR 1.205(b)) at the time the claim is copied.

WILLIAM FELDMAN,
Apr. 10, 1974. *Acting Assistant Commissioner for Patents.*

[922 O.G. 442]

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(53) **Translations of Foreign Language References**

Frequently, Office actions cite references that are in a foreign language. In the event a translation of the entire text or portion of the text of the reference is readily available in the examiners' search files, a copy of the translation will normally be included with the Office action. However, applicants are cautioned that the inclusion of a translation with a foreign language reference should not be construed to mean that the examiner used or relied on the translation, or that it is accurate or an official translation made by the Patent and Trademark Office.

While this service may be infrequent, it could be increased by the submission of translations by the applicant to the Office. Accordingly, it is requested that translations of foreign language references be transmitted to the Office, and in particular be transmitted with the response to the Office action or in a separate envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231. In addition, it would be of great assistance to the Office in filing the translation, if the translation carried the following: 1. an identification of the foreign language reference and, where possible. 2. its location in the examiners' search files (e.g. location should be known if reference was cited in Office action). If indentifying information is not available, the incoming translation should carry the name "Scientific Library" thereon so that it can be processed by the Library.

WILLIAM FELDMAN,
Oct. 26, 1977. *Deputy Assistant Commissioner for Patents.*

[964 O.G. 24]

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(54) **Restriction Between Inventions**

The practice set out in the notice of June 20, 1968 (852 O.G. 509) is hereby revised as follows.

Under the statute an application may properly be required to be restricted to one of two or more claimed inventions only if they are able to support separate patents and they are either independent or distinct.

If it is demonstrated that two or more claimed inventions have no disclosed relationship ("independent"), restriction should be required, and it is not necessary to further show that the claimed inventions are distinct. If it is demonstrated that two or more claimed inventions have a disclosed relationship ("dependent"), then a showing of distinctness is required to substantiate a restriction requirement.

Where inventions are neither independent nor distinct, one from the other, or they are not sufficiently different to support more than one patent, their joinder in a single application must be permitted.

Every requirement to restrict has two aspects, (1) the reasons (as distinguished from the mere statement of conclusion) why the inventions *as claimed* are either independent or distinct, and (2) the reasons for insisting upon restriction therebetween.

In order to support a requirement to restrict between combination and subcombination inventions, two-way distinctness must be demonstrated.

If it can be shown that a combination, as claimed (1) does not require the particulars of the subcombination as claimed for patentability, and (2) the subcombination can be shown to have utility either by itself or in other and different relations, the inventions are distinct. When these factors cannot be shown, such inventions are not distinct.

Two or more claimed subcombinations, disclosed as usable together in a single combination, and which can be shown to be separately usable, are usually distinct from each other.

In applications claiming inventions in different statutory categories only one-way distinctness is needed to support a restriction requirement. For example, in applications containing claims to both process and apparatus, distinctness may be shown if (1) the process as claimed can be practiced by hand or by another materially different apparatus, or (2) the apparatus as claimed can be used to practice another and materially different process.

As in the notice of May 1, 1974 concerning Markush-

Type claims (922 O.G. 1016), if the search and examination of an entire application can be made without serious burden, the examiner is encouraged to examine it on the merits, even though it includes claims to distinct or independent inventions.

WILLIAM FELDMAN,
Apr. 9, 1975. *Deputy Assistant Commissioner for Patents.*

[934 O.G. 450]

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(55) Revised Practice Re Markush-Type Claims

This notice deals with Markush-type generic claims which include a plurality of alternatively usable substances or members. In most cases, a recitation by enumeration is used because there is no appropriate or true generic language. In many cases, the Markush-type claims include independent and distinct inventions. This is true where two or more of the members are so unrelated and diverse that a prior art reference anticipating the claim with respect to one of the members would not render the claim obvious under 35 U.S.C. 103 with respect to the other member(s).

In applications containing claims of that nature, the Examiner may require a provisional election of a single species prior to examination on the merits. The provisional election will be given effect in the event that the Markush-type claim will be examined fully with respect to the elected species and further to the extent necessary to determine patentability. Should the Markush-type claim be found not allowable, examination will be limited to the Markush-type claim and claims to the elected species, with claims drawn to species patentably distinct from the elected species held withdrawn from further consideration.

As an example, in the case of an application with a Markush-type claim drawn to the compound C-R, wherein R is a radical selected from the group consisting of A, B, C, D, and E, the Examiner may require a provisional election of a single species, CA, CB, CC, CD, or CE. The Markush-type claim would then be examined fully with respect to the elected species and any species considered to be clearly unpatentable over the elected species. If on examination the elected species is found to be anticipated or rendered obvious by prior art, the Markush-type claim and claims to the elected species shall be rejected, and claims to the non-elected species would be held withdrawn from further consideration. As in the prevailing practice, a second action on the rejected claims would be made final.

On the other hand, should no prior art be found that anticipates or renders obvious the elected species, the search of the Markush-type claim will be extended. If prior art is then found that anticipates or renders obvious the Markush-type claim with respect to a *non-elected species,* the Markush-type claim shall be rejected and claims to the non-elected species held withdrawn from further consideration. The prior art search, however, will not be extended unnecessarily to cover all non-elected species. Should applicant, in response to this rejection of the Markush-type claim, overcome the rejection, as by amending the Markush-type claim to exclude the species anticipated or rendered obvious by the prior art, the amended Markush-type claim will be re-examined. The prior art search will be extended to the extent necessary to determine patentability of the Markush-type claim. In the event prior art is found during the re-examination that anticipates or renders obvious the amended Markush-type claim, the claim will be rejected and the action made final. Amendments submitted after the final rejection further restricting the scope of the claim will not be entered.

If the members of the Markush group are sufficiently few in number or so closely related that a search and examination of the entire claim can be made without serious burden, the Examiner is encouraged to examine all claims on the merits, even though they are directed to independent and distinct inventions. In such a case, the Examiner will not follow the above procedure and will not require restriction.

This notice supersedes the practice set out in 922 O.G. 1016. dated May 1, 1974.

Although the above practice is now in effect, a rule change proposal is also being considered to provide for prosecution of multiple inventions in a single patent application by submission of additional fees.

DONALD W. BANNER,
Oct. 23, 1978. *Commissioner of Patents and Trademarks.*

[976 O.G. 128]

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(56) Revised Procedures for Recording Searches and Considerations of Certain Prior Art

In order to provide a more complete, accurate and uniform record of what has been searched and considered by the examiner for each application the Patent and Trademark Office has established revised procedures for recording search data in the application file. Such a record is of importance to anyone evaluating the strength and validity of a patent, particularly if the patent is involved in litigation. These new procedures will also facilitate the printing of certain search data on patents.

Under the revised procedures, searches are separated into two categories and listed, as appropriate, in either the "SEARCHED" box or a newly added "SEARCH NOTES" box on the file jacket.

Until file jackets can be reprinted to include a second search data box, all file jackets for new applications will have the "SEARCH NOTES" box stamped therein by the Mail Room. If additional space is required, entries will be continued on the outside right flap of the file jacket.

The revised procedures will apply to all new applications in which the first search is made after April 1, 1977 and do not affect the manner in which references are listed on the form PTO-892. "Notice of References Cited." Appropriate changes in the Manual of Patent Examining Procedure will be made.

A. "SEARCHED" Box Entries

Search entries made here, except those for search updates (see item A. 3 below), will be printed under "Field of Search" on the patent front page. Therefore, the following searches will be recorded in the "SEARCHED" box by the examiner along with the date and the examiner's initials, according to the following guidelines:

1. *A complete search of a subclass,* including all United States and foreign patent documents and other publications placed therein. The complete classification (class and subclass) will be recorded.
2. *A limited search of a subclass,* for example, a search that is restricted to an identifiable portion of the patent documents placed therein. If, however, only the publications in a subclass are searched, such an entry is to be made under "SEARCH NOTES" rather than under "SEARCHED." (See item B, 4 below.)
   The class and subclass, followed by the information defining the portion of the subclass searched in parenthesis, will be recorded.
3. *An update of a search previously made.*
   This search entry will be recorded in a manner to indicate clearly which of the previously recorded searches have been updated, followed by the expression "(updated)." Search update, entries, although recorded in the "SEARCHED" box, will not be printed.
   When a search made in a parent application is updated during the examination of a continuing application, those searches updated, followed by "(updated from parent S.N. _____)" will be recorded. If the parent has been patented, the patent number "Pat. N. _____" instead of serial number in the above phrase will be recorded.
4. *A mechanized search* of a file of documents in a specific art, conducted by using key terms to retrieve

documents. The name of the mechanized search system as it appears in the following list will be recorded along with the expression "MS File" to indicate mechanized search file.

Mechanized Search Systems

Termatrex Systems:

Automatic Fuel Controls
Boots & Shoes
Chemical Testing
Combined Fasteners
Electrical Contact Materials
Surface Bonding Using Critical Metal

Edge-Notched Card System:

Fluid Devices

Punch Card Systems:

Electrolysis
Organometallics
Steroids

Computer Controlled Microfiche Search Systems (CCMSS):

A-D Convertors
Digital Data Processing Systems
Special Purpose Digital Processing Systems

When a search with a Termatrex or Edge-Notched card system is conducted, the examiner will complete form PTO-1041 in two copies, recording all queries searched, even those which yield only nonrelevant documents. All documents returned by the system in response to a query which are not actually reviewed will have an "X" drawn through their associated access and patent numbers. When conducting a search with a Punched Card system, the examiner will place in the application file the Code Sheet on which the terms searched have been marked along with the machine tape listing the documents retrieved. Any document not actually reviewed will have an "X" drawn through that document's number on the listing.

When conducting a search with the CCMSS search systems, the machine-produced search report, which lists the terms and tagged documents, will be placed in the application file on the right flap of the file jacket. Any tagged document not actually reviewed will have an "X" drawn through that document number on the search report.

B. "SEARCH NOTES" Box Entries

Entries made in the "SEARCH NOTES" box are of equal importance to those placed in the "SEARCHED" box; however, these entries will not be printed on any resulting patent. They are intended to complete the application file record of areas and/or documents considered by the examiner in the search. The examiner will record the following searches in the "SEARCH NOTES" box and in the manner indicated, with each search dated and initialled:

1. *A cursory search,* or scanning, of a subclass, i.e., a search usually made to determine if the documents classified there are relevant. The classification will be recorded, followed by "(Cursory)."
2. *A consultation* with other examiners to determine if relevant search fields exist in their areas of expertise. The class and subclass discussed, if not actually searched, will be recorded, followed by "(consulted)." This entry may also include the name of the examiner consulted and the art unit.
3. *A search of a publication* not located within the classified patent file, e.g., a library search, a text book search, a Chemical Abstracts search, etc. The following data will be recorded for each type of literature search:
   a. *Abstracting publications,* such as Chemical Abstracts or the Engineering Index—the name of the publication, the list of terms consulted in the index and the period covered will be recorded.
   b. *Periodicals*—The title and period or volumes covered, as appropriate will be recorded.
   c. *Books*—The title and author, edition or date, as appropriate, will be recorded.
   d. *Other types of literature* not specifically mentioned above (i.e., catalogs, manufacturer's literature, private collections, etc.).

   Unless the search is a cursory or browsing one, data as necessary to provide unique identification of material searched will be recorded. Specific materials cited by the examiner will not be recorded again here.
   e. *Computer search in Scientific Library*—An on-line computerized literature searching service which uses key terms and index terms to locate relevant publications in many large bibliographic data bases is available to examiners in the Scientific Library of the Patent and Trademark Office. A member of the library staff is assigned to assist examiners in selecting key terms and to program the search.

   There are two on-line search systems: The Lockheed Information Systems and the SDC Search Service.

   These search systems include many data bases.

   A copy of the search printout will be made and placed in the application file, attached to the right flap of the file jacket.

   The examiner will also indicate which publications were reviewed by initialling and dating the copy of the printout in the left margin adjacent to each reviewed publication. If only an abstract of a document was reviewed, the note of "ck'ed abst." will be made next to the initials and date. If the complete document was reviewed, the note "ck'ed doc." will be placed with the initials and date.
4. A search of only the *publications in a subclass.* The class and subclass followed by "(publications only)" will be recorded.
5. *A review of art cited in a parent application* or in an original patent, as required for all continuing and reissue applications, or a review of art cited in related applications or patents mentioned within the specification, such as those included to provide background of the invention. The serial number of a parent application that is still Pending or abandoned, followed by "refs. checked" or "refs. ck'ed" will be recorded. If for any reason not all of the references are checked because they are not available or clearly not relevant, such exceptions will be noted. The patent number of a parent or related application that was patented or of an original patent now being reissued will be recorded along with the expressions "refs. checked" or "refs. ck'ed."

C. Not Recorded

The following data will not be recorded in either of the search boxes, but will be noted in the application file as indicated below.

1. *Citations of prior art by applicants conforming to Rule 98 and the practice thereunder.*
   In each instance where all prior art referred to in a paper placed in the application file is considered, the examiner will place the notation "all ck'ed" and his or her initials adjacent to the citation.
2. *Citations of prior art by applicants not conforming to Rule 98 and the practice thereunder.*
   In each instance where an examiner considers, but does not cite on form PTO-892, specific prior art referred to in a paper placed in the application file, the examiner will place a notation adjacent to the reference. If all the references referred to in such a paper are reviewed, the examiner will place the notation "all ck'ed" and his or her initials adjacent the citation. If included in the specification, the examiner will write his or her initials adjacent to any reference(s) checked and enter "checked" or "ck'ed" in the left margin opposite the initials. If presented in a separate paper or in the remarks of an amendment, the examiner's initials and "checked" or "ck'ed" will be entered adjacent to the citation(s) or wher-

ever possible to indicate clearly those checked.

RENE D. TEGTMEYER,
Feb. 22, 1977. *Assistant Commissioner for Patents.*

[956 O.G. 1546]

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(57) **Prior Art Cited by Applicants**

Effective immediately, applicants are encouraged to use new form PTO-1449, "List of Prior Art Cited by Applicant," when preparing a prior art statement under 37 CFR 1.97–1.99. A copy of the form is included herewith from which suitable reproductions can be made. This form, which will enable applicants to provide the PTO with a uniform listing of prior art citation, supersedes form PTO-3.72.

While the filing of prior art statements is voluntary, the procedure is governed by the guidelines of Section 609 of the Manual of Patent Examining Procedure and 37 CFR 1.97 through 1.99. To be considered a proper prior art statement, form PTO-1449 shall be accompanied by an explanation of relevance of each listed item, a copy of each listed patent or publication or other item of information and a translation of the pertinent portions of foreign documents (if an existing translation is readily available to the applicant), and should be submitted in a timely manner as set out in MPEP Sec. 609.

Examiners will consider all prior art citations submitted in conformance with 37 CFR 1.98 and MPEP Sec. 609 and place their initials adjacent the citations in the boxes provided on the form. Examiners will also initial citations not in conformance with the guidelines which may have been considered. A reference may be considered by the examiner for any reason whether or not the citation is in full conformance with the guidelines. A line will be drawn through a citation if it is not in conformance with the guidelines and has not been considered. A copy of the submitted form, as reviewed by the examiner, will be returned to the applicant with the next communication. The original of the form will be entered into the application file.

Each citation initialed by the examiner will be printed on the issued patent in the same manner as prior art cited by the examiner on form PTO-892.

The reference designations "AA," "AB," etc. (referring to applicant's reference A, Applicant's reference B, etc.) will be used by the examiner in the same manner as examiner's reference designations "A," "B," "C," etc. on Office Action Form PTO-1142.

WILLIAM FELDMAN,
Aug. 15, 1980. *Deputy Assistant Commissioner for Patents.*

[998 O.G. 8]

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(58) **Express Abandonments**

Experience over the past several months has indicated the need to clarify and re-emphasize existing practice regarding express abandonments submitted under 37 CFR 1.138

Since 1966, when Rule 138 was revised, it is no longer required that the applicant and the assignee of record, if any, sign an express abandonment. The revised rule indicates that a patent application may be expressly abandoned by an attorney or agent of record. Therefore, prior to signing a declaration of express abandonment of a patent application, it is imperative that the attorney or agent of record exercise every precaution in ascertaining that the abandonment of the application is in accordance with the desires and best interests of the applicant. Moreover, special care should be taken to insure that the appropriate application from a group of related applications is correctly identified in the letter of abandonment.

A declaration of abandonment signed by the applicant or his attorney or agent of record becomes effective when an appropriate official of the Office takes action in recognition of the declaration. When so recognized, the date of abandonment may be the date of recognition or a different date if so specified in the declaration itself. For example, where a continuing application is filed with a request to abandon the prior application as of the filing date accorded the continuing application, the date of the abandonment of the prior application will be in accordance with the request once it is recognized.

Action in recognition of an express abandonment may take the form of an acknowledgement by the examiner or the Patent Issue Division of the receipt of the express abandonment, indicating that it is in compliance with 37 CFR 1.138 (see Section 711.01 MPEP).Alternatively, recognition may be no more than the transfer of drawings to a new application pursuant to instructions which include a request to abandon the application containing the drawings to be transferred (see 37 CFR 1.60 and Section 608.02(i) MPEP).

It is suggested that divisional applications being submitted under 37 CFR 1.60 be reviewed before filing to ascertain whether the prior application should be abandoned. Recent experience reveals that some divisional applications are being filed under 37 CFR 1.60 with requests to transfer the drawings from, and abandon, the prior application. Following the recognition of the abandonment, the attorney or agent signing the request informs the Office that the request was made by mistake for any one of a number of reasons. Care should be exercised in situations such as these as the Office looks on express abandonments as acts of deliberation, intentionally performed.

Another common situation involves the submission of an express abandonment following the allowance of an application The express abandonment may not be recognized unless it is actually received by appropriate officials in time to act before the date of issue. In those cases, once a patent number and issue date have been assigned to the application, it is considered too late to act on the express abandonment unless a petition under Rule 313(b) or Rule 183 is granted (see Section 711.01 of MPEP).

WILLIAM FELDMAN,
Apr. 7, 1975. *Deputy Assistant Commissioner for Patents.*

[934 O.G. 2]

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(59) **Notice of Abandonment for Failure to Prosecute Application**

Effective immediately the Patent Examining Corps will mail a communication, concerning all applications becoming abandoned in the Corps for failure to prosecute, to the correspondence address of record.

The communication to be mailed will merely comprise a copy of the first page of the Office action, to which applicant failed to properly respond, the copy including stamped language thereon indicating that the application has become abandoned and the date that the copy was mailed. The language stamped on the copy will be as follows: APPLICATION HAS BECOME ABANDONED. THIS NOTICE MAILED: _____. In no case will the mere failure to receive a notice of abandonment affect the status of an abandoned application.

This new procedure should enable applicants to take appropriate and diligent action to reinstate an application inadvertently abandoned for failure to timely respond to an official communication. In most cases, a petition to revive under 37 CFR 1.137 will be the appropriate remedy. It may be that a response to the Office action was mailed to the Office with a certificate of mailing declaration as a part thereof (notice of October 26, 1976: 951 O.G. 1342) but was not received in the Office. In this instance, adequate relief may be available by means of a petition to withdraw the holding of abandonment.

In any instance, if action is not taken promptly after receiving the notice of abandonment, appropriate relief may not be granted.

If a lack of diligent action is predicated on the contention that neither the Office action nor the notice of

abandonment was received, one may presume that there is a problem with the correspondence address of record. Accordingly, your attention is directed to recent notices of May 28, 1975, and September 9, 1976, dealing with changes of address (935 O.G. 1352 and 951 O.G. 454). In essence, it is imperative that a paper notifying the Office of a change of address be filed promptly in *each* application in which the correspondence address is to be changed.

If an application is abandoned or a patent lapsed for an excessive time a terminal disclaimer may be required. A terminal disclaimer may also be required where the holding of abandonment or lapse is withdrawn but a determination is made that action attempting to correct the problem should have been taken in a more diligent manner.

WILLIAM FELDMAN,
May 9, 1977. *Deputy Assistant Commissioner for Patents.*

[959 O.G. 24]

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(60) New Procedures for Recordation of Interviews

This notice establishes within the Patent and Trademark Office additional general procedures for the recordation of interviews. Proposed procedures were published in the Official Gazette of June 28, 1977 (959 O.G. 36) for comment from interested members of the public by August 10, 1977. Fifteen written comments were received the majority of which were favorable to the proposed procedures. Careful consideration has been given to the comments and the procedures are being adopted with a few changes.

Under present practice it is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability as set forth in section 713.04 of the Manual of Patent Examining Procedure (MPEP). This practice is continued and further amplified as set forth below.

Recent surveys have indicated that the substance of many interviews has not been made of record or the text thereof is incomplete as to substantive matters. In some cases, the substance of an interview may be presented as arguments in a subsequent response filed by the applicant but without any indication that they had been presented at the interview. In order to help insure a better record of examiner-applicant interviews in application files, the following new procedures are adopted to become effective for interviews conducted on and after January 1, 1978. Appropriate changes will be made in the Manual of Patent Examining Procedure (MPEP).

Examiners will complete a two-sheet carbon interleaf Interview Summary Form for each interview held where a matter of substance has been discussed by checking the appropriate boxes and filling in the blanks in neat handwritten form. Discussions regarding only procedural matters, directed solely to restriction requirements (for which interview recordation is otherwise provided for in Section 812.01 of the MPEP), or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below.

The Interview Summary Form shall be given an appropriate paper number, placed in the file and listed on the "Contents" list on the file wrapper. The docket and serial register cards will not be updated to reflect this interview. In a personal interview, the duplicate copy of the Form will be removed and given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephonic interview, the copy will be mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner before an allowance is not likely or if other circumstances dictate, the Form will be mailed promptly after the telephonic interview rather than with the next official communication. The original of the completed Form will be made of record and placed in the right hand flap of the file.

The Form provides for recordation of the following information:

—Serial Number of the application
—Name of applicant
—Name of examiner
—Date of interview
—Type of interview (personal or telephone)
—Name of participant(s) (applicant, attorney or agent, etc.)
—An indication whether or not an exhibit was shown or a demonstration conducted
—An identification of the claims discussed
—An identification of the specific prior art discussed
—An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). (Agreements as to allowability are tentative and do not restrict further action by the examiner to the contrary.)
—The signature of the examiner who conducted the interview
—Names of other Patent and Trademark Office personnel present.

The Form also contains a statement reminding the applicant of his responsibility to record the substance of the interview.

It is desirable that the examiner orally remind the applicant of his obligation to record the substance of the interview in each case unless both applicant and examiner agree that the examiner will record same. Where the examiner agrees to record the substance of the interview, or when it is adequately recorded on the Form or in an attachment to the Form, the examiner will check a box at the bottom of the Form informing the applicant that he need not supplement the Form by submitting a separate record of the substance of the interview.

It should be noted, however, that the Interview Summary Form will not be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview:

The complete and proper recordation of the substance of any interview should include at least the following applicable items:

1) A brief description of the nature of any exhibit shown or any demonstration conducted.
2) an identification of the claims discussed.
3) an identification of specific prior art discussed.
4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the examiner.
5) a brief identification of the general thrust of the principal arguments presented to the examiner. The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he feels were or might be persuasive to the examiner.
6) a general indication of any other pertinent matters discussed, and
7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete or accurate, the examiner will take appropriate action as set forth in MPEP Section 713.04. If the record is complete and accurate, the examiner should place the indication "Interview record OK" on

the paper recording the substance of the interview along with the date and the examiner's initials.

C. MARSHALL DANN,
Aug. 30, 1977. *Commissioner of Patents and Trademarks.*

[962 O.G. 21]

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(61) **Statements Filed Under Atomic Energy Act And NASA Act**

Attention is called to the provisions of section 152 of the Atomic Energy Act of 1954 (42 U.S.C. 2182) and section 305(c) of the National Aeronautics and Space Act of 1958 (42 U.S.C. 2457). These statutes provide that the title to inventions useful in the production or utilization of special nuclear material or atomic energy, made or conceived in the course of or under any contract, subcontract, or arrangement entered into with or for the benefit of the Atomic Energy Commission, and any invention made in the performance of any work under any contract of the National Aeronautics and Space Administration, shall be vested in the United States. They also provide that no patent may be granted for any invention useful in the production or utilization of special nuclear material or atomic energy, or which in the opinion of the Commissioner has significant utility in the conduct of aeronautical or space activities, unless the applicant files with his application or within 30 days after request therefor by the Commissioner, a statement under oath setting forth (*a*) the full facts in regard to the making or conception of the invention, and (*b*) the situation with regard to the contractual relationships involving the Commission or the Administration. Careful attention should be given the exact wording of the requirements of whichever of these sections is pertinent in order to assure that all of the requirements are met. Since the duty of requiring the statements is placed by law on the Commissioner of Patents, it is incumbent on the Commissioner to determine whether the statements are timely filed and sufficient in substance to comply. Since these laws do not provide for any extension of the 30-day period or for reviving an applicaton which has become abandoned for failure to file a proper statement, it is important that such statements be timely filed and that they do so comply in order to avoid loss of valuable patent rights.

The "full facts" involved in the conception and making of an invention should include those which are unique to that invention. The use of form paragraphs or printed forms which set forth only broad generalized statements of fact is not ordinarily regarded as meeting the requirements of these statutes.

This office has construed the word "applicant" in both of these statutes to mean the inventor or joint inventors in person. Accordingly, in the ordinary situation, the statements must be signed by the inventor or joint inventors, if available. This construction is consistent with the fact that no other person could normally be more knowledgeable of the "full facts concerning the circumstances under which such invention was made," (42 U.S.C. 2457) or, "full facts surrounding the making or conception of the invention or discovery" (42 U.S.C. 2182).

In instances where an applicant does not have first-hand knowledge whether the invention involved work under any contract, subcontract, or arrangement with or for the benefit of the Atomic Energy Commission, or had any relationship to any work under any contract of the National Aeronautics and Space Administration, and includes in his statement information of this nature derived from others, his statement should identify the source of his information. Alternatively, the statement by the applicant could be accompanied by a supplemental declaration or oath, as to the contractual matters, by the assignee or other person, e.g., an employee thereof, who has the requisite knowledge.

Where an applicant is deceased or incompetent, or where it is shown to the satisfaction of this Office that he refuses to furnish a statement or cannot be reached after diligent efforts, declarations or statements under oath setting forth the information required by the statutes may be accepted from an officer or employee of the assignee who has sufficient knowledge of the facts. The offer of such substitute statements should be based on the actual unavailability of or refusal by the applicant, rather than mere inconvenience. Where it is shown that one of joint inventors is deceased or unavailable, a statement by all of the other joint inventor(s) may be accepted.

WILLIAM FELDMAN,
Aug. 13, 1973. *Deputy Assistant Commissioner for Patents.*

[914 O.G. 2]

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(62) **Extensions of Time to Submit Affidavits After Final Rejection**

Not infrequently, applicants request an extension of time, stating as a reason therefor that more time is needed in which to submit an affidavit. When such a request is filed after final rejection, the granting of the request for extension of time is without prejudice to the right of the examiner to question why the affidavit is now necessary and why it was not earlier presented. If applicant's showing is insufficient, the examiner may deny entry of the affidavit, notwithstanding the previous grant of an extension of time to submit it. The grant of an extension of time in these circumstances serves merely to keep the case from becoming abandoned while allowing the applicant the opportunity to present the affidavit or to take other appropriate action. Moreover, prosecution of the application to save it from abandonment must include such timely, complete and proper action as required by 37 CFR 1.113. The admission of the affidavit for purposes other than allowance of the application, or the refusal to admit the affidavit, and any proceedings relative thereto, shall not operate to save the application from abandonment.

Implicit in the above practice is the fact that affidavits submitted after final rejection are subject to the same treatment as amendments submitted after final rejection. *In re Affidavit Filed After Final Rejection,* 152 USPQ 292, 1966 C.D. 53.

WILLIAM FELDMAN,
July 25, 1977. *Deputy Assistant Commissioner for Patents.*

[961 O.G. 16]

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(63) **Extension of Time Limit**

This notice is intended to clarify certain misunderstandings and indicates the treatment given to requests for an extension of time in a situation where applicant has been given a time limit to complete an otherwise incomplete but bona fide attempt to respond to the previous Office action and advance the case to final action.

According to 37 CFR 1.135(c) when the applicant has filed a response to an examiner's action but consideration of some matter or compliance with some requirement has been inadvertently omitted, an opportunity to explain and supply the omission may be given before the question of abandonment is considered. According to the M.P.E.P., Section 710.02(c), the examiner may give applicant one month or the remainder of the period for response, whichever is longer, to complete the response. Neither the regulation nor the M.P.E.P. indicate that this time can be extended.

Under the regulation, the missing matter or lack of compliance must be considered by the examiner as being "inadvertently omitted." Once an inadvertent omission is brought to the attention of the applicant, the question of inadvertence no longer exists. Therefore, any further time to complete the response would not be appropriate under 37 CFR 1.135(c). Accordingly, no extension of time will henceforth be granted in these situations.

WILLIAM FELDMAN,
Nov. 28, 1977. *Deputy Assistant Commissioner for Patents.*

[965 O.G. 14]

(64) Examination of Patent Applications Having an Issue of Fraud

This notice deals with the general procedures established within the Patent Office for the handling, during ex parte examination, of applications in which, or in relation to which, some facts appear or representations are made raising an issue of fraud.

Such applications should be forwarded by the examiner to the Office of the Assistant Commissioner for Patents as soon as the facts or representations are discovered. The application will then be reviewed and a determination made as to whether immediate action on the issue of fraud is necessary or whether the consideration of such an issue should be delayed until after the normal ex parte examination by the examiner (if such examination has not previously taken place).

Where compelling reasons dictate immediate action, the application will not be returned to the examining group for normal ex parte examination until such action is complete. Otherwise, the application will be returned to the examining group. The examiner will complete the examinations as to all matters except that any issues relating to possible fraud will not be considered or commented upon. When this examination is completed the application will be returned to the Office of the Assistant Commissioner for Patents. An investigation will then be undertaken to resolve the issues relating to the possible fraud. Such an investigation may include a requirement for additional information from applicant, or from the examiner, should it be necessary for the proper conduct of the investigation.

If the investigation reveals a prima facie case of fraud an Order to Show Cause why the application should not be stricken under Rule 56 of the Rules of Practice [37 CFR 1.56] will be issued.

If a prima facie case of fraud does not exist, or is adequately rebutted, a decision will be entered in the application file stating that the Patent Office has found no evidence necessitating striking the application. The application will then be returned to the examining group or other appropriate Patent Office section for further action.

WILLIAM FELDMAN,
Jan. 2, 1975. *Acting Assistant Commissioner for Patents.*

[930 O.G. 1455]

(65) TITLE 37—PATENTS, TRADEMARKS AND COPYRIGHTS

Chapter 1—Patent and Trademark Office, Department of Commerce

Part 1—Rules of Practice in Patent Cases

Patent Examining and Appeal Procedures

On October 4, 1976 notice was given in the Federal Register (41 FR 43729) of a proposal to amend sixteen sections of Title 37 of the Code of Federal Regulations relating to patent examining and appeal procedures. Interested persons were invited to comment on the proposal by December 7, 1976. One hundred seventy-five written letters and statements were submitted. A hearing was held in Arlington, Virginia on December 7, 1976 at which 21 persons testified orally. Careful consideration has been given to all comments received and the proposal is being adopted with certain changes.

The regulations adopted involve all sections that were proposed to be revised, amended or added—namely, §§1.11, 1.14, 1.52, 1.56, 1.65, 1.69, 1.97, 1.98, 1.99, 1.109, 1.175, 1.194, 1.196, 1.291, 1.292, and 1.346. Amendments also are being made in two sections which were not included in the published proposal—§§1.51 and 1.176. Since amendments to these sections are closely related to the substance of matters notice and public comment on these amendments are deemed unnecessary.

In addition, amendments are being adopted which were published for comment in two earlier, much less extensive proposals that concerned availability of certain files for public inspection. A notice of a proposed amendment to §1.14(b) was published on June 4, 1974 (39 FR 19786). A notice of a proposed amendment to § 1.11(a) was published on September 17, 1974 (39 FR 33376). No negative comments were submitted with respect to either of these proposals and both are being adopted without change.

The text of the rules will be reproduced in the Patent and Trademark Office **Official Gazette** in about a month with additions indicated by arrows and deletions indicated by brackets to help readers identify the changes. A transcript of the hearing, the letters and written statements received, and a summary and analysis of the comments are available for public inspection in Room 11E10 of Crystal Plaza Building 3, 2021 Jefferson Davis Highway, Arlington, Virginia.

Purpose of Rules

The purpose of the rules that are being adopted is to improve the quality and reliability of issued patents by strengthening patent examining and appeal procedures. It is desirable that patents be as dependable as possible, so as to enhance the incentives provided by the patent system to make inventions, to invest in research and development, to put new or improved products on the market, and to disclose inventions that otherwise would be kept as trade secrets. It is believed that the rules being adopted will help to maintain strong patent incentives.

The rules afford patent owners an opportunity, through the filing of a reissue application, to obtain a ruling from an examiner on the pertinence of additional prior art after a patent has been issued. The rules also broaden the public's opportunity for participation in the patent examining process, consistent with the limitations of statute, the protection of trade secrets, and the need to avoid making it unduly expensive to obtain a patent.

The rules set forth the duty of candor and good faith which applicants have to the Patent and Trademark Office and encourage them to provide information about the prior art in a way that will make it more useful to examiners. A provision for foreign language oaths by individuals who do not understand English is intended to make them more aware of their representations and of their obligations.

Under the rules more Patent and Trademark Office decisions that could have important precedent value will be available to the public, and some additional files will be available for inspection. Proceedings before the Board of Appeals are modified to help avoid the issuance of invalid patents. The rules encourage examiners to see that persons inspecting the file history of issued patents will be able to tell why the case was allowed.

Reissue Applications

Amended §1.175 permits a patent owner to have new prior art considered by the Office by way of a reissue application without making any changes in the claims or specification. It is adopted with no change from the proposal. The requirement for an oath or declaration alleging that the reissue applicant believes "the original patent to be wholly or partly inoperative or invalid. . . ." is dispensed within §1.175(a) (1) unless the applicant believes that to be the case. Section 1.175(a) (4) recognizes that reissues may be filed to have the patentability of the original patent considered in view of prior art or other information relevant to patentability which was not previously considered by the Office.

Thus, a patentee may file a reissue if he believes his patent is valid over prior art not previously considered by the Office but would like to have a reexamination. The procedure may be used at any time during the life of a patent. During litigation, a federal court may, if it chooses, stay proceedings to permit new art to be considered by the Office.

If a reissue application is filed as a result of new prior art with no changes in the claims or specification and the examiner finds the claims patentable over the new art, the application will be rejected as lacking statutory basis for a reissue, since 35 USC 251 does not authorize

reissue of a patent unless it is deemed wholly or partly inoperative or invalid. However, the record of prosecution of the reissue will indicate that the prior art has been considered by the examiner.

A substantial majority of the comments received favored amended §1.175 as a means for improving the reliability of patents and avoiding unnecessary litigation costs. The negative comments generally questioned the statutory authority of the Commissioner to adopt this section. Authority for §1.175 is believed to exist in 35 U.S.C. 6, which is the Commissioner's rulemaking authority, and in 35 U.S.C. 251. The latter section of the statute requires that the patent be deemed wholly or partly inoperative or invalid before a reissue may be granted, but does not require such a belief by the patentee before a reissue application may be filed. The case law does not suggest that the approach of new §1.175(a)(4) is inconsistent with 35 U.S.C. 251.[1] Inasmuch as 35 U.S.C. 251 is a remedial provision,[2] it is believed that a liberal interpretation is justified and that adequate authority exists for the amended section.

Amended §1.11(b) opens all reissue applications to inspection by the general public. Section 1.11(b) also provides for announcement of the filings of reissue applications in the *Official Gazette.* This announcement will give interested members of the public an opportunity to submit to the examiner information pertinent to patentability of the reissue application. The announcement will include at least the filing date, reissue application and original patent numbers, title, class and subclass, name of the inventor, name of the owner of record, name of the attorney or agent of record, and examining group to which the reissue application is assigned. Section 1.11(b) is amended from the proposal to so indicate. Reissue applications already on file on the effective date of the section will not be automatically open to inspection and will not be announced in the *Official Gazette.* However, a liberal policy will be followed in granting petitions for access to individual applications already on file.

In order that members of the public may have time to review the reissue application and submit pertinent information to the Office before the examiner's action, §1.176 is amended to provide that reissue applications will not be acted on sooner than two months after the *Official Gazette* announcement of filing.

A substantial majority of the comments received favored adoption of §1.11(b). The only opposition was based upon a suggestion that no statutory authority exists. However, since reissue applications contain no new disclosure, and therefore no trade secrets or confidential information, they are considered to present a "special circumstance" within the meaning of 35 U.S.C. 122.

The insertion of "all" as the fifth word of the first sentence of §1.11(b) is for clarity. The word "furnished" is changed to "obtained" in §1.11 for clarity.

Protests and Public Use Proceedings

Amended §§1.291 and 1.292 give greater recognition to the value of written protests and public use petitions in avoiding the issuance of invalid patents.

A substantial majority of the comments favored these sections and viewed them as improving the quality of issued patents. Entry of protests has been upheld in court.[3]

Section 1.291(a) provides that public protests against pending applications will be entered in the application file and will, if they meet stated requirements, be considered by the examiner. To guarantee consideration by the examiner, protests must be accompanied by copies of prior art documents relied upon, although protests without copies will not necessarily be ignored. This is similar to the requirement of new §1.98 that copies of patents and publications accompany prior art statements. Section 1.291 does not contemplate permitting a protester to participate as a party in further proceedings. In the case of applications available to the public, such as reissue applications, the protester may file papers rebutting statements made by the applicant. The examiner at his discretion may request a protester to submit additional written information or may provide extra time for comments by a protester to be filed.

To ensure consideration by the examiner, all protests must be timely submitted. Protests will generally be considered timely submitted, if they are filed before final rejection or allowance of the application by the examiner. The consideration given to protests filed after final rejection or allowance of the application by the examiner will depend upon the relevance of the prior art documents submitted and the point in time at which th ey are submitted. Obviously, if the prior art documents anticipate or clearly render obvious one or more claims they will not knowingly be ignored. It must be recognized, however, that the likelihood of consideration by the examiner decreases as the patent date approaches. Accordingly, protests must be filed early in order to ensure their consideration.

The first sentence of §1.291(a) is deleted as unnecessary. Section 1.291(a) also is changed from the proposal to make clear that it applies to pending applications and that all protests will be referred to the examiner having charge of the subject matter involved.

Section 1.291(b) incorporates the existing Office policy of permitting persons to submit prior art citations or copies of prior art after a patent has been granted. The section is changed from the proposal by the addition of the words "any papers related thereto" to recognize that statements as to the pertinence of prior art may be submitted. Both the citations and the related papers are to be entered without comments. The material submitted is not examined by the Office but is available to members of the public inspecting Office records.

Some suggestions were received for major modifications of §1.291. It was suggested that an advisory opinion of the examiner be placed in the patent file when protests were received after issuance of the patent. Several persons supported a suggestion for examiners to state whether a "new issue" was raised by prior art cited by a protester. Another suggestion was that a procedure similar to that used in the recent Trial Voluntary Protest Programs[4] be adopted on a continuing basis. These suggestions were carefully considered, but are not adopted. The suggestions extend substantially beyond §1.291 as proposed, and their benefits do not appear sufficient to justify the added cost at this time.

Materials submitted to the Office under §§1.291 and 1.292 are to be served upon the applicant, patentee, attorney or agent when possible. The term "patentee" is used in its ordinary sense as defined in 35 USC 100(d). If service is not possible, materials are to be submitted in duplicate so that the Office can attempt to send the duplicate copy. The proposal is changed by adding the words "with the Office" after "filed" in §§1.291(c) and 1.292(b) for clarity.

In §1.292, the requirement that petitioner bear the Office's expenses in conducting the public use proceeding is deleted. Section 1.292 is also amended to ensure that the existence of public use proceedings is recorded in the application file wrapper. Notice of a petition for a public use proceeding will be entered in the file in lieu of the petition itself when the petition and the accompanying papers are too bulky to accompany the file. Any public use papers not physically entered in the file will be publicly available whenever the application file wrapper is available.

Duty of Disclosure

Amended §1.56 defines the duty to disclose information to the Office and the criteria for striking an application when that duty is violated. The wording of the section is changed in several respects from the proposal, but the purpose and general scope are the same as in the proposal. The section codifies the existing Office policy on fraud and inequitable conduct, which is believed consistent with the prevailing case law in the federal courts. The expanded wording of the section is intended to be helpful to individuals who are not expert in the judicially developed doctrines concerning fraud. The section should have a stabilizing effect on future decisions in the Office and may afford guidance to courts as well.

A majority of comments received favored §1.56 as proposed or with modifications. Persons opposed expressed concern over the imprecise definition of the duty of disclosure and the possibility that the proposal would substantially increase the burden on patent applicants. Some stated that there would be increased litigation as a result of the proposal. Several suggestions were received on better ways to define the individuals who should disclose information and the kinds of information that should be disclosed.

The first sentence of §1.56(a) is changed from the proposal by adding the word "substantively," so that individuals having a duty of disclosure are limited to those who are "substantively involved in the preparation or prosecution of the application." This change is intended to make clear that the duty does not extend to typists, clerks, and similar personnel who assist with an application. This phrase, when taken with the last sentence of §1.56(a), is believed to provide an adequate indication of the individuals who are covered by the duty of disclosure. The word "with" is inserted in the first sentence of §1.56(a) before "the assignee" and before "anyone to whom there is an obligation to assign" to make clearer that the duty applies only to individuals, not to organizations.

Numerous comments concerned the term "relevance" that was used in the proposal. In response to the comments, language is substituted in §1.56 and related sections which is believed to establish a clearer standard for determining whether information need be disclosed to the Office. "Relevant" is replaced by "material" because the latter term connotes something more than a trivial relationship. It appears to be more commonly used in court opinions. In addition, the third sentence of §1.56, which defines materiality, is rewritten. The sentence now states that information is material "where there is a substantial likelihood that a reasonable examiner would consider it important in deciding whether to allow the application to issue as a patent." The sentence paraphrases the definition of materiality used by the Supreme Court in its recent decision in *TSC Industries* v. *Northway*.[5] Although in that case the court was concerned with rules promulgated by the Securities and Exchange Commission, the Court's articulation of materiality is believed consistent with the prevailing concept that has been applied by lower courts in recent patent cases.

The definition of materiality in §1.56 will have to be interpreted in the context of patent law rather than securities law. Principles followed by courts in securities cases should not be translated to patent cases automatically. It is noteworthy, however, that in formulating the definition of materiality in *TSC Industries* the Supreme Court considered some of the same matters over which concern was expressed in the public comments on proposed §1.56. The court noted that the standard of materiality should not be so low that persons would be "subjected to liability for insignificant omissions or misstatements," or so low that the fear of liability would cause management "simply to bury the shareholder in an avalanche of trivial information—a result that is hardly conducive to informed decision making."[6]

Although the third sentence of §1.56(a) refers to decisions of an examiner, it is intended that the duty of disclosure would apply in the same manner in the less common instances where the official making a decision on a patent application is someone other than an examiner—e.g., a member of the Board of Patent Interferences or the Board of Appeals. This is implicit in the duty "of candor and good faith" toward the Office that is specified in the first sentence of §1.56(a).

Comments and questions were received concerning the term "information" used in the second and third sentences of §1.56(a) and elsewhere. It means all of the kinds of information required to be disclosed under current case law. In addition to prior art patents and publications, it includes information on prior public uses, sales, and the like. It is not believed practicable to define information in the text of the rule at this time. However, the rule is not intended to require disclosure of information favorable to patentability—e.g., evidence of commercial success of the invention. Neither is it meant to require disclosure of information concerning the level of skill in the art for purposes of determining obviousness.

Several comments were received concerning the duty to disclose information the patent applicant regards as confidential, including information the applicant has received from another party under an injunction of secrecy. This problem has existed prior to amendment of §1.56. The Patent and Trademark Office, of course, keeps information disclosed by applicants confidential until a patent is issued. It has been suggested that the Office should develop a mechanism for continuing to hold information in confidence after issuance of a patent if in the judgment of the examiner the information is not material to the examination of the application. The feasibility of offering a rule for public comment on this topic at a later date will be considered.

New §1.56(b) is added to make clear that information may be disclosed to the Office through an attorney or agent of record or through a pro se inventor, and that other individuals may satisfy their duty of disclosure to the Office by disclosing information to such an attorney, agent or inventor. Information that is not material need not be passed along to the Office.

Proposed sections 1.56 (b) and (c) have been revised and shortened and appear at §§1.56 (c) and (d). The proposal was criticized for leaving it open to the Office to apply a different standard of materiality from the one set forth in §1.56.[7] Section 1.56(d) as adopted states that an application "shall" be stricken when the criteria set forth are met. Thus §1.56(d) as adopted establishes a single standard for striking applications.

The term "inequitable conduct" is dropped from §1.56(d) as covering too great a spectrum of conduct to be subject to mandatory striking. Inequitable conduct that is equivalent to fraud is intended to come within the definition of fraud. The Court of Customs and Patent Appeals already has interpreted "fraud" in existing §1.56 to encompass conduct of this sort.[8] Moreover, §1.56(d) as adopted calls for striking an application either for fraud or for a violation of the duty of disclosure.

In §1.56(d) "bad faith" is substituted for the term "deliberate" that was used in the proposal. This change is to make clear than an intent to deceive (or gross negligence equivalent to such an intent) must be shown before an application will be stricken. Bad faith is not present if information is withheld as a result of an error in judgment or inadvertence.

Several comments concerned whether attorneys and agents could represent their clients' interests and at the same time comply with §1.56. Similar comments were directed to §§1.97 to 1.99. It is of course in the interest of the client to have a valid patent and this cannot be obtained without disclosure of known material facts. It is not inconsistent for an attorney or agent to fulfill his duty of candor and good faith to the Office and to act as an advocate for his client. The submission of information under §1.56 does not preclude the submission of arguments that such information does not render the subject matter of the application unpatentable.

In §1.65 a new third sentence is added to require the patent applicant to acknowledge the duty of disclosure. The language is changed from the proposal to be consistent with changes made in §1.56. To allow time for the Office and applicants to revise printed oath and declaration forms now in use, the mandatory acknowledgement of the duty of disclosure in amended §1.65 does not become effective until January 1, 1978. Applicants at their option may include the new language in oaths and declarations filed prior to the effective date. The Office will publish a separate notice in the Federal Register adding a sentence acknowledging the duty of disclosure to appropriate forms in 37 CFR Part 3, "Forms for Patent Cases."

The word "statement" is deleted from the title of §1.65 to avoid confusion with the prior art statement of §1.97 through 1.99.

Amended §1.346 emphasizes that there must be a rea-

sonable basis to support every allegation of improper conduct made by a registered practitioner in any Office proceeding. The language that was proposed is clarified in the section as adopted. Although §1.346 is limited to papers filed in Office proceedings, the amendment to §1.346 is not intended to imply that disciplinary action never will be taken against a registered practitioner under §1.348 for a groundless allegation of improper conduct in a court proceeding.

Prior Art Statement

New §§1.97, 1.98 and 1.99 deal with prior art statements and provide a mechanism by which patent applicants may comply with the duty of disclosure provided in §1.56. The sections have been substantially changed from the proposal, in response to comments received.

Unlike the corresponding part of the proposal, the sections as adopted are not mandatory, though applicants are strongly encouraged to follow the procedures described in them. Applications will be examined whether or not a prior art statement is filed and whether it complies with the rules or is defective. It is nevertheless believed that applicants will find that the use of prior art statements complying fully with the requirements of §§1.97 through 1.99 will be the best way to satisfy the duty of disclosure. The Patent and Trademark Office cannot assure that prior art disclosed in other ways will be considered by the examiner.

Sections 1.97 through 1.99 do not prescribe the content of what materials should be submitted in the prior art statement; this is for the applicant and the attorney or agent to decide in the light of the duty of disclosure expressed in §1.56. The only criterion contained in §§1.97 through 1.99 as to content of the art cited is in § 1.97(b). This subsection indicates that the statement will be construed as a representation that the prior are listed includes what the submitter considers to be the closest art of which he is aware. The submitter need not decide which particular items of prior art are the closest or identify any items as such; the representation is simply that he is not withholding known prior art which he considers closer than that which is submitted. Section 1.97(b) makes clear that the prior art statement is not representation that a search has been made or that no better art exists.

In §1.97(a) the time for filing the prior art statement is extended from the two months of the original proposal to three months. In most cases prior art submitted within three months will be available to the examiner before he takes up the case for action, though it will be helpful if citations are made as promptly as possible.

Section 1.98 lists the elements of the prior art statement: a listing of the art, a concise explanation of the relevance of each listed item, and copies of the art or the pertinent portions thereof.

The prior art statement resembles somewhat the "patentability statement" of the proposal and the "patentability brief" proposed elsewhere.[9] The name has been changed to reflect a change in the requirements of §1.98(a). Unlike the proposed version of this paragraph, which called for an explanation of why the claimed invention is believed patentable over the cited art, the paragraph as adopted calls only for a concise explanation of the relevance of each listed item. This may be nothing more than identification of the particular figure or paragraph of the patent or publication which has some relation to the claimed invention. It might be a simple statement pointing to similarities between the item of prior art and the claimed invention. It is permissible but not necessary to discuss differences between the prior art and the claims. It is thought that the explanation of relevance will be essentially as useful to the examiner as the formerly proposed explanation of patentability, and should be significantly less burdensome for the applicant to prepare.

Section 1.98 requires a copy of each patent or publication cited, including U.S. patents, to accompany the prior art statement. Several comments questioned the need for burdening the applicant to supply copies of materials that are present in the Office's files. However, substantial time and effort often is needed to locate a document in the Office's files. Since the person submitting the prior art statement generally has available a copy of the item being cited, it is believed that expense and effort can be minimized by having that person supply the copy in all cases. Consideration has been given to proposals to allow the applicant to submit an order for copies of the patents along with his statement instead of actually submitting copies. This will be further studied, but to date no way has been found to assure that the copies will be available to the examiner by the first action unless the applicant submits them with the prior art statement.

Other changes to §§1.97 through 1.99 from the proposal eliminate unnecessary language and clarify the requirements.

A notice published in 1974[10] contained guidelines for the citation of prior art by applicants. Many of those guidelines are repeated or superseded by §§1.97 through 1.99. In order to allow applicants, attorneys and agents time to adjust their procedures to comply with the requirements for prior art statements, the effective date of §§1.97 through 1.99 will be July 1, 1977. Until these new sections become effective, applicants should continue to follow the 1974 guidelines. Issuance of a revised notice, to take effect July 1, 1977, is under study.

A survey conducted by the Office in 1976 concludes that many applicants have not been citing prior art to the Office.[11] It is hoped that with the duty of disclosure expressly set forth in §1.56, applicants will perceive that it is to their advantage to use the procedures of §§1.97 through 1.99.

Section 1.51 is amended by designating the existing rule as §1.51(a) and adding new §1.51(b) which contains a reference to §§1.97 through 1.99.

Foreign Language Oaths

Amended §1.52 and new §1.69 are adopted as proposed.

Section 1.69 requires that oaths and declarations be in a language which is understood by the individual making the oath or declaration, i.e., a language which the individual comprehends. If the individual comprehends the English language, he must use it. If the individual cannot comprehend the English language, any oath or declaration must be in a language which the individual can comprehend. If an individual uses a language other than English for an oath or declaration, the oath or declaration must include a statement that the individual understands the content of any documents to which the oath or declaration relates. If the documents are in a language the individual cannot comprehend, the documents may be explained to him so that he is able to understand them.

The Office will provide approved translations for as many of the oath or declaration forms which appear in Part 3 of Title 37 of the Code of Federal Regulations as practicable, and in as many languages as practicable, probably using a side-by-side English/foreign language format. The availability of the foreign language forms will be announced in the *Official Gazette* at a later date.

The change in §1.52, providing for an exception to the requirement that oaths and declarations be in the English language, is necessitated by the adoption of §1.69.

Although very few persons opposed §§1.52 and 1.69, several suggested that the philosophy behind the change be extended to the specification, requiring the specification to be in a language which the applicant understands, accompanied by an English translation. This suggestion was not considered feasible because of the obvious burdens on the applicant and the danger to the applicant and the public if the translation is not literally correct. Also, if a large number of applications were filed in a foreign language, there would be significant administrative burdens on the Office. Attention is directed to the Manual of Patent Examining Procedure. §608.1, which permits non-English language applications

to be filed in certain limited circumstances.

Other suggested modifications of the proposed rule included: (1) using an English language oath or declaration with one additional clause in a language understood by the person making the oath or declaration, the clause stating that the person understands all the documents to which the oath or declaration relates; and (2) extending the two month grace period for filling an English translation of an oath or declaration filed under §1.65.

After due consideration, suggestion (1) was believed not to accomplish the objectives of the rule as well as the adopted rule. Suggestion (2) would cause unsatisfactory delays in the initial processing of applications.

Decisions and Files Made Public

Section 1.14(d) makes more explicit the conditions under which significant decisions of the Patent and Trademark Office will be made available to the public, and includes reference to decisions of the Board of Patent Interferences, in addition to decisions of the Board of Appeals and the Commissioner.

A large majority of the comments received were favorable. Several commentators felt that more decisions would be made available as a result of the proposed section and that it would assist in publicizing aspects of Office procedure which may not have been available previously.

Some negative comments were based on the view that the Freedom of Information Act[12] required all decisions of the Office to be made publicly available. A greater number of those opposing the proposed section, however, felt that applicants should have an absolute right to have their applications maintained in confidence and that no information should be made public without specific authorization from them. One commentator felt that rulemaking on this subject should be deferred until currently pending litigation[13] under the Freedom of Information Act was finally resolved.

The section as adopted is applicable to decisions deemed by the Commissioner to involve an interpretation of patent laws or regulations that would be of significant precedent value, where such decisions are contained in either pending or abandoned applications or in interference files not otherwise open to the public. It is applicable whether or not the decision is a final decision of the Patent and Trademark Office.

The parenthetical phrase in the first sentence of the proposed section, which cited other provisions of the rules under which decisions are open to public inspection, is deleted as unnecessary and possibly confusing. Also, in view of several comments received, the period of time during which an applicant or party in interest may object to having a decision made public is extended from one month to two months. At least twenty days is given to request reconsideration and seek court review before a decision is made public over an objection.

Section 1.14(d) is considered to place a duty on the Patent and Trademark Office to identify significant decisions and to take the steps necessary to inform the public of such decisions, by publication of such decisions, in whole or in part. It is anticipated, however, that no more than a few dozen decisions per year will be deemed of sufficient importance to warrant publication under the authority of this section.

Amended §1.14(b) allows public inspection of abandoned applications referred to in defensive publications. The comments received on the proposed amendment on this topic in 1974 expressed no opposition and the proposal is adopted without change.

The amendment is intended to encourage use of the defensive publication program provided under §1.139. The objective of that program is to make available to the public the technical disclosure of applications in which the owner prefers to publish an abstract in lieu of obtaining an examination. Existing §§1.11(b) and 1.139 open the complete defensive publication application to inspection by the general public upon publication of the abstract. With the amendment, an abandoned application referred to in a defensive publication application will likewise be open to public inspection, avoiding any need to repeat its contents in the defensive publication application. Thus, public availability of the applications involved should be of benefit both to the applicant and the public.

A suggestion was made that the section be extended still further to include abandoned applications referred to in foreign patents. This suggestion, however, goes too far beyond the proposal that was published and has too uncertain an impact to be adopted at this time.

Amended §1.11(a) provides earlier access to the file of an interference which involved a patent or an application on which a patent has issued. All comments that were submitted on the 1974 proposal on this topic were favorable and two commentators felt the proposal should be extended further. The proposal is being adopted without change.

Under present practice, access to the file of an interference is not permitted until judicial review of the decision of the Board of Patent Interferences has been exhausted. The amended section allows access to the file after final decision of the Board of Patent Interferences if that decision is an award of priority as to all parties. It is believed that such earlier access will be of benefit to members of the public by making available information relevant to the issuance of the patent whether or not the interference decision is still being adjudicated.

Patent Appeals

Section 1.194 clarifies the circumstances in which oral hearings should be requested, provides for oral arguments by or on behalf of examiners in certain appeals and reduces the time permitted for oral arguments.

Comments relating to this section were favorable by a very substantial majority, although there were several reservations to the effect that §1.194(a) tended to discourage or downgrade oral arguments. Participation by examiners was considered to be desirable not only from the standpoint of improving the overall presentation of the argument, particularly in complex cases, but also for the educational and experience benefits to the examiners themselves.

The only opposition to the section was based on the feeling that oral hearings would be discouraged. The rule is intended to discourage oral hearings only to the same extent as the Office's 1975 Official Gazette notice on the subject.[14] Section 1.194(a) indicates that oral hearings should not be requested as a matter of course in every appeal, but only in those circumstances where the appellant feels that such a hearing will be of material assistance to the proper presentation of the appeal. The section expressly provides that equal consideration will be accorded in deciding all appeals, whether or not an oral hearing is held.

In appeals where the appellant has requested an oral hearing §1.194(b) provides for oral argument by, or on behalf of, the primary examiner, if such argument is considered to be helpful by either the primary examiner or the Board. This provision incorporates the present practice of permitting examiners to present an oral argument before the Board.[15] It gives the Board additional discretionary authority to request presentation of an oral argument by, or on behalf of the examiner to ensure that all issues are fully and accurately presented.

Section 1.194(c) provides, as does existing §1.194, that appeals will be assigned for consideration and decision without an oral hearing where none has been requested by the appellant. Where an oral hearing has been requested, a day of hearing will be set, and both appellant and the primary examiner will be notified. A provision for notice to the examiner is added to the proposed version. Additionally, §1.194(c) reflects the present practice of limiting oral argument on behalf of the appellant to twenty minutes.[16] The time permitted for argument by the examiner has been shortened from twenty minutes, as proposed, to fifteen minutes. The examiner, unlike the appellant, will not ordinarily need time to present the facts of the case or for rebuttal.

In any appeal where oral argument is to be presented

by, or on behalf of, the primary examiner, the appellant will be given due notice of that fact.

Proposed §1.196(b) would have authorized the Board of Appeals to reject allowed claims, in cases before it, whenever the Board had knowledge of grounds for so doing.

While a majority of those commenting on this section favored in principle the concept of allowing the Board to have this right, significant concern was voiced that there was no statutory authority for the Board to actually reject allowed claims. Further, the question of proper authority for judicial review of such action by the Board was a matter of concern. Other reasons advanced in opposition to the section were that applicants would be inhibited from appealing by the risk of having allowed claims rejected and that the proposal would create a higher presumption of validity in cases reviewed by the Board. A significant number commented that it would be more appropriate for the Board to remand the case to the primary examiner for consideration of the grounds raised by the Board. This would afford the applicant an opportunity to demonstrate the patentability of the claims and would remove any question as to statutory authority.

In view of the comments received, existing §1.196(b) will not be modified, but a new §1.196(d) is added providing express authority for the Board of Appeals to include, in its decision, a statement of any grounds for rejecting any allowed claim that it believes should be considered by the primary examiner. Section 1.196(d) provides that the Board may remand the case to the examiner for such consideration, and that the applicant shall have an opportunity to respond to the grounds set forth by the Board prior to consideration, by the examiner. If the previously allowed claims are rejected by the examiner, the rejection may be appealed to the Board.

The new section further provides that a decision of the Board which includes a remand will not be considered as a final decision in the case, but that the Board, following conclusion of the proceedings before the primary examiner, will either adopt its earlier decision as final or will render a new decision based on all appealed claims, as it considers appropriate. In either case, final action by the Board will give rise to the existing alternatives available to an appellant following a decision by the Board.

In situations where the primary examiner concludes after consideration of all the evidence and argument that the remanded claims should be allowed, the new rule dealing with reasons for allowance (§1.109) provides an appropriate mechanism for him to explain, on the record, his reasoning for coming to this conclusion, notwithstanding the grounds set forth by the Board in its statement.

Promulgation of new §1.196(d) does not affect the Board's existing authority to remand a case to the primary examiner without rendering a decision in appropriate circumstances. Section 1.196(d) is not intended as an instruction to the Board to reexamine every allowed claim in every appealed application. It is, rather, intended to give the Board express authority to act when it becomes apparent, during the consideration of rejected claims, that one or more allowed claims may be subject to rejection on either the same or on different grounds from those applied against the rejected claims.

Reasons for Allowance

New §1.109 is intended to emphasize and formalize the examiner's authority to state his reasoning for allowing a claim or claims. The authority is discretionary with the examiner and is only to be used when the record does not otherwise reveal the reasons for allowance.

A majority of the comments received favored the rule as proposed because it would tend to provide courts and others who were reviewing the patent with a clearer record. Those who opposed the rule most often gave the reason that the examiner might fail to state all the reasons or the strongest reasons why a claim was allowed, which could place unnecessary limitations on the claims or create an estoppel in subsequent litigation or licensing.

To help insure that the examiner's statement of his reasoning in allowing a claim will not unnecessarily limit the claims or create an estoppel, a final sentence is added to the proposal which states that failure of the applicant to comment upon or rebut the examiner's reasoning "shall not give rise to any implication that the applicant agrees with or acquiesces in the reasoning of the examiner."

Several commenters suggested that stricter enforcement of §§1.111 and 1.133 would eliminate the need for a new rule concerning reasons for allowance. Situations exist, however, where a statement of reasons for allowance could be helpful, for example when an examiner withdraws a rejection for reasons not suggested by the applicant; when an applicant submits several arguments for allowing a claim and the examiner finds not all of them persuasive: when an examiner allows a claim on the first Office action after citing very close prior art: and when the examiner allows a claim after remand from the Board of Appeals (see new §1.196(d)).

The first sentence of the proposed rule is changed to define more precisely the circumstances in which an examiner's statement is appropriate, as well as to define more precisely the content of the statement. The statement will include the examiner's "reasoning." The examiner may state his reasoning whenever he "believes that the record of the prosecution as a whole does not make clear his reasons for allowing a claim or claims."

Several persons commented that the rule should provide a procedure for appeal from the examiner's statement of his reasoning. The rule does permit applicants to comment upon the examiner's reasoning. If the applicant does not wish to comment, he may reserve for a later proceeding, without prejudice, any rebuttal. [Text of adopted rules appears in 37 CFR, revised 7-1-77]

Effective Date. These amendments become effective on March 1, 1977, except for §§1.51, 1.97, 1.98, and 1.99 which become effective on July 1, 1977, and §§1.65 and 1.69 which become effective on January 1, 1978.

C. MARSHALL DANN,
Jan. 18, 1977. *Commissioner of Patents and Trademarks.*

Betsy Ancker-Johnson, Ph.D.
Jan. 19, 1977. *Assistant Secretary for Science and Technology.*

[955 O.G. 1054]

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(66) **Guidelines for Implementation of Recently Revised Rules**

Recently a number of rules relating to Patent Examining and Appeal procedures were revised. The new rules were published in the Federal Register at 42 F.R. 5588 on January 28, 1977, and in the *Official Gazette* at 955 O.G. 1054 on February 22, 1977. The following guidelines are being published to describe the procedures which are being followed in implementing 37 CFR sections 1.11, 1.97–1.99, 1.109, 1.194, 1.291 and 1.292.

Files Open to the Public

Section 1.11(b) is applicable only to those reissue applications filed on or after March 1, 1977. Those reissue applications already on file will not be automatically open to inspection but a liberal policy will be followed by the Office of the Solicitor in granting petitions for access to such applications.

(**Note.**—These sections as changed will be incorporated into the Manual text in Rev. 3 of the Manual.)

For those reissue applications filed on or after March 1, 1977, the following procedure will be observed:

1) The filing of reissue applications will be announced in the *Official Gazette* and will include certain identifying data as specified in section 1.11(b). Any member of the general public may request access to

a particular reissue application filed after March 1, 1977. Since no record of such request is intended to be kept, an oral request will suffice.

2) The reissue application files will be maintained in the examining groups and inspection thereof will be supervised by group personnel. Although no general limit is placed on the amount of time spent reviewing the files, the Office may impose limitation, if necessary, e.g., where the application is actively being processed.

3) Where the reissue application has left the examining group for administrative processing, requests for access should be directed to the appropriate supervisory personnel in the Division or Branch where the application is currently located.

4) Requests for copies of papers in the reissue application file must be in writing addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231 and may be either mailed or delivered to the Office mailroom. The price for copies made by the Office is thirty cents per page.

Prior Art Statements

This notice supersedes the notices of August 12, 1974 (926 O.G. 2) and May 19, 1975 (935 O.G. 902) relating to citations of prior art. Although new sections 1.97 through 1.99 are not effective until July 1, 1977, and are not mandatory upon applicants, they provide an ideal mechanism for complying with the duty of disclosure under 37 CFR 1.56. The statements should be submitted in accordance with the following guidelines:

1) Prior art statements should be submitted at the time of filing the application or within three months thereafter and may be separate from the specification or incorporated therein. The statement shall serve as a representation that the person preparing it has included therein what he believes to be the closest prior art of which he is aware and shall not be construed as a representation that no better art exists or that a search has been made. If the first action in the application is received prior to three months after filling of the application and no prior art statement has been submitted, the prior art statement may be submitted with the response to the first action and be considered timely.

2) The statement shall include a listing of the patents, publications or other information which the preparer of the statement wishes to cite and a concise explanation of the relevance of each listed item. Copies of the pertinent portions of all listed documents shall be supplied along with the statement, both when incorporated into the specification and when filed separately. If two or more patents or publications considered material are substantially identical, a copy of a representative one shall be included with the statement and others may merely be listed with an indication of which are considered to be substantially identical.

3) A translation of the pertinent portions of foreign language patents or publications considered material should be transmitted if an existing translation is readily available to the applicant. It will be sufficient, however, to transmit an equivalent English language patent or publication so long as it is identified as an equivalent.

Where the applicant has submitted copies of prior art in accordance with these guidelines in a prior application, reference to the prior application and the submission therein will be sufficient for the continuing application as far as the copies are concerned. As far as the statement per se is concerned, the relevance of the prior art to the claimed subject matter must be indicated if it differs from its relevance as explained in the prior application.

4) If prior to the issuance of a patent an applicant pursuant to his duty of disclosure under 37 CFR 1.56, wishes to bring to the attention of the Office additional patents, publications or other information not previously submitted, the additional information should be submitted to the Office with reasonable promptness. It may be included in a supplemental prior art statement or may be incorporated into other communications to be considered by the examiner. Any transmittal of additional information shall be accompanied by explanations of relevance and by copies in accordance with the requirements aforementioned. The transmittal should include a statement explaining why the prior art was not earlier submitted.

While the Patent and Trademark Office will not knowingly ignore any prior art which might anticipate or suggest the claimed invention, no assurance can be given that cited art or other information not submitted in accordance with these guidelines will be considered by the examiner.

After the claims have been indicated as allowable by the examiner, e.g., by the mailing of an Ex parte Quayle action, a notice of allowability (PTOL—327), an examiner's amendment (PTOL—37), or a Notice of Allowance (PTOL—85), any citations submitted will be placed in the file. Since prosecution has ended, however, such submissions will not ordinarily be considered by the examiner unless the citation is accompanied by:

(*a*) A proposed amendment cancelling or further restricting at least one independent claim and narrowing the scope of protection sought;

(*b*) A timely affidavit under 37 CFR 1.131 with respect to the material cited; or

(*c*) A statement by the applicant or his attorney or agent that, in the judgment of the person making the statement, the prior art or other information cited raises a serious question as to the patentability of the claimed subject matter, or is closer prior art than that of record.

If the material is submitted after the base issue fee has been paid, it must also be accompanied by a petition under 37 CFR 1.183 requesting a waiver of 37 CFR 1.312. Such petition, if granted, would result in review of the art by the examiner and possible entry of the amendment.

In each instance where an examiner considers, but does not cite on form PTO—892, specific prior art referred to in a paper placed in the application file, the examiner will place a notation adjacent to the reference according to the following:

If included in the specification, the examiner will write his or her initials adjacent to any references checked and enter "checked" in the left margin opposite the initials. If presented in a separate paper or in the remarks of an amendment, the examiner's initials and "checked" will be entered adjacent to the citations or wherever possible to indicate clearly those checked.

Reasons for Allowance

One of the primary purposes of the change in Section 1.109 is to improve the quality and reliability of issued patents by providing a complete file history which should clearly reflect, as much as is reasonably possible, the reasons why the application was allowed. Such information facilitates evaluation of the scope and strength of a patent by the patentee and the public and may help avoid or simplify litigation of a patent.

The practice of stating the reasons for allowance is not new and the rule merely formalizes the examiner's existing authority to do so and provides applicants an opportunity to comment upon any such statement of the examiner.

When the examiner determines that it is necessary or desirable, a "Statement of Reasons for Allowance" will be prepared. The "Statement" will usually be an attachment to either a notice of allowability (PTOL—327) or Examiner's Amendment (PTOL—37). Any comments considered necessary by applicant must be submitted no later than the issue fee and should preferably *accompany* the issue fee. Submission with the issue fee avoids any delay in the processing of the application and avoids the necessity to associate the comments with the application while it is in issue except at the time the file must be

pulled to record the payment of the issue fee. Such comments will be entered in the application file by the Allowed Files Branch with an appropriate notation on the "contents" list of the file wrapper, but will not be reviewed by the examiner.

Oral Hearings Before Board of Appeals

Section 1.194 clarifies the circumstances in which oral hearings should be requested and provides for oral arguments by, or on behalf of, primary examiners in certain appeals.

Under Section 1.194, the following procedures will be in effect:

1) In accordance with Section 1.192, appellants who desire an oral hearing must request the same at the time of filing the appeal brief.
2) If appellant has requested an oral hearing and the primary examiner intends to present an oral argument, the last paragraph of the examiner's answer will indicate this intention.
3) Notice of the oral hearing will be given to the appellant and, at the same time, to the primary examiner in those cases in which the primary examiner has indicated an intention to present an oral argument.
4) After an oral hearing has been confirmed and the date set as provided in Section 1.194(c), the application file will be delivered to the examiner via the appropriate Group Director at least one week prior to the date of the hearing for those cases in which the examiner is expected to be present at the hearing. In those cases where the Board requests the presentation of an oral argument by, or on behalf of, the primary examiner, the appellant will be so notified. The Board's request for an oral argument may, where appropriate, indicate specific points or questions to which the argument should be particularly directed. The application file will be returned to the Board before the hearing.
5) In those appeals in which an oral hearing has been confirmed and either the primary examiner or the Board has indicated a desire for oral argument, such oral argument may be presented whether or not appellant appears.

Protests and Public Use Proceedings

Amended sections 1.291 and 1.292 give greater recognition to the value of written protests and public use petitions and are intended as an aid in avoiding the issuance of invalid patents.

Under sections 1.291 (b) and (c) and 1.292(b), the following procedures will be observed:

1) Only in those instances where it has not been possible to serve protest papers upon the applicant, attorney or agent, should duplicates of the papers submitted be provided. In this case the appropriate examining group will attempt to get the duplicate copy to the applicant, attorney or agent. However, every effort should be made by the protester to effect service.
2) Citations of prior art and any papers related thereto may be entered in the file after a patent has been granted by submitting them to the attention of the Record Room, where they will be entered without comment by the Office. If after diligent effort it has not been possible to serve the prior art citations and related papers on the patentee, his attorney or agent, duplicate copies should be submitted in which case the Record Room will attempt to get the duplicate copy to the owner of record.
3) When public use petitions and accompanying papers are submitted they, or a notice in lieu thereof, will be entered in the application file. Duplicate copies should be submitted only when, after diligent effort, it has not been possible for petitioner to serve a copy of the petition on the applicant, his attorney or agent in which case the Office of the Solicitor will attempt to get the duplicate copy to the applicant, his attorney or agent.
4) To ensure consideration by the examiner, protests should be timely submitted, i.e., before final rejection or allowance. Consideration of protests filed after final rejection or allowance will depend upon the relevance of the prior art documents and the point in time at which they are submitted. Documents which clearly anticipate or render obvious one or more claims will not knowingly be ignored. If protests are not timely submitted or if they fail to comply with section 1.291(a) as to the submission of a copy of each prior art document relied upon, they will be acknowledged and referred to the examiner having charge of the subject matter involved for entry in the application file and such consideration as seems warranted.

In each instance where an examiner considers but does not cite on form PTO—892 specific prior art referred to in a protest, the examiner will place a notation in the protest paper adjacent to the reference which will include his or her initials and the term "checked."

Additional future guidelines as to protest procedures may be developed after gaining experience with the new practice.

Mar. 18, 1977. C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

[957 O.G. 11]

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(67) Further Guidelines Relating to 37 CFR 1.175 and 1.291, as Amended Effective March 1, 1977

The experience with the above revised rules since their effective date has indicated the desirability of further guidelines relating to the manner in which they are to be implemented. The following guidelines are supplemental to those which have already been provided in the publication of the rules in the Federal Register of January 28, 1977 (42 F.R. 5588) (955 O.G. 1054, February 22, 1977), and in the earlier Guidelines published at 957 O.G. 11 on April 12, 1977. Copies of the latter two *Official Gazette* publications appear as items 59 and 60 of the current "Consolidated Listing of Recent Official Gazette Notices" published at 966 O.G. 22–32. The present guidelines are also supplemental to the appropriate sections of the Manual of Patent Examining Procedure, e.g., Sections 1401–1401.12 relating to reissue, and Section 1309.02 relating to protests. Sections 721 and 721.01 of the MPEP contain guidelines to be followed if either a reissue or other application, or a protest relative to any application, raises questions of "fraud" or "violation of the duty of disclosure." Accordingly, the above-noted materials should be consulted in addition to these further guidelines, which are in themselves not intended to completely treat the subjects involved. For the most part, the guidelines herein merely identify and clarify existing requirements and practices. The Patent and Trademark Office has a general study underway of the procedures for handling reissue applications and protests which may result in future modifications in these guidelines.

Section 1.175(a)(4) of the revised rules recognizes that reissues may be filed to have the patentability of the original patent, without changes therein, considered in view of prior art or other information relevant to patentability which was not previously considered by the Office.

The experience to date reveals the need to clarify what should be filed by the applicant in order to seek the reexamination contemplated by sub-section (a)(4) and also the type and content of the examination which the examiner will give to applications filed under subsection (a)(4).

First, sub-section (a)(4) does *not* contemplate, or permit, the filing of a reissue application without an oath or declaration. To the contrary, an oath or declaration is required, and such oath or declaration *must* comply with each of sub-sections (a)(4), (a)(5), and (a)(6). Thus, under sub-section (a)(4) the oath or declaration must particularly specify the "prior art or other information relevant to patentability, not previously considered by the Office," which the reissue applicant considers "might cause

the examiner to deem the original patent wholly or partly inoperative or invalid." The reissue oath or declaration must also request, under sub-section (a)(4), that "if the examiner so deems, the applicant be permitted to amend the patent and be granted a reissue patent."

Under sub-section (a)(5), the reissue oath or declaration, including those filed under sub-section (a)(4), must particularly specify "the errors or what might be deemed to be errors relied upon, and how they arose or occurred." This sub-section has two specific requirements, *both of which must be complied with* in, or by, the reissue oath or declaration. Thus, insofar as (a)(4) reissue oaths or declarations are concerned, the oath or declaration must particularly specify "what might be deemed to be errors." For example, if the reissue applicant is seeking reexamination in view of particular prior art or other information, the reissue oath or declaration must point out "what might be deemed to be errors" in patentability in view of such prior art or other information. More specifically, the oath or declaration, in appropriate circumstances, might state that some or all claims might be deemed to be too broad and invalid in view of references X and Y which were not of record in the patented files. Usually, a general statement will suffice. But where appropriate, such as where the pertinence of the new references X and Y are not evident, more specificify about "what might be deemed to be errors" should be provided. Of course, the reissue applicant does *not* have to, and presumably does *not*, agree that "errors" exist. However, the reissue applicant does have to, in the reissue oath or declaration of the sub-section (a)(4) type, particularly specify "what might be deemed to be errors relied upon."

In addition to specifying "what might be deemed to be errors relied upon," sub-section (a)(5) also requires "particularly specifying" "how they arose or occurred." This means, of course, that the reissue oath or declaration must specify the manner in which that which "might be deemed to be errors" "arose or occurred." For example, if the (a)(4) reissue is being filed for reexamination in view of prior art or other information, the reissue oath or declaration must indicate when and the manner in which the reissue applicant became aware of the possible error in the patent, e.g., third party allegation, discovery of prior art or other information subsequent to issuance of patent, knowledge of prior art or other information before issuance of patent with significance being brought out after issuance by third party, through allegations made in litigation involving the patent, etc. It is particularly important that the reissue oath or declaration adequately specify how "what might be deemed to be errors" arose or occurred. If the reissue oath or declaration does not particularly specify "how," i.e., the manner in which any possible errors arose or occurred, the Office will be unable to adequately evaluate reissue applicant's statement in compliance with (a)(6) that the "errors, if any, arose 'without any deceptive intention' on the part of the applicant."

Sub-section (a)(6) specifically requires that the reissue oath or declaration, including those filed under sub-section (a)(4), contain the averment that the "errors, if any, arose 'without any deceptive intention' on the part of the applicant." This requirement must not be overlooked in filing since the requirement for an absence of "deceptive intention" is a necessary part of any reissue application, including those of the (a)(4) type.

The significance and importance of sub-sections (a)(5) and (a)(6) must not be overlooked or minimized insofar as reissue oaths or declarations are concerned, including those filed under sub-section (a)(4). These sub-sections, to a large extent, enable the Office to make its determination required by statute that any error is "without any deceptive intention."

In addition to meeting the requirements of Sections 1.175 (a)(4)–(a)(6) insofar as the reissue oath or declaration is concerned, the reissue applicant, at the time of filing the reissue application, including the (a)(4) type reissue application, must also be aware of the requirements of 37 CFR 1.56, as revised effective March 1, 1977. Reissue applicants may, of course, utilize new Sections 1.97–1.99 to comply with the duty of disclosure required by Section 1.56. While Section 1.97(a) provides for filing of the prior art statement within three months of the filing of the application, reissue applicants are encouraged to file the prior art statement at the time of filing the application in order that such prior art statements will be availale to the public during the two-month period provided by Section 1.176.

In situations in which the patent for which reexamination is being sought is, or has been, involved in litigation, which raised a question material to examination of the reissue application, such as the validity of the patent, or any allegation of fraud, the existence of such litigation must be brought to the attention of the Office at the time of, or shortly after, filing the application, either in the reissue oath or declaration, or in a separate paper, preferably accompanying the application as filed. Litigation begun after filing of the reissue application also should be promptly brought to the attention of the Office. The details and documents from the litigation, insofar as they are "material to the examination" of the reissue application as defined in 37 CFR 1.56(a), should accompany the application as filed, or be submitted as promptly thereafter as possible. For example, the defenses raised against validity of the patent, or charging fraud or inequitable conduct in the litigation, would normally be "material to the examination" of the reissue application. It would, in most situations, be appropriate to bring such defenses to the attention of the Office by filing in the reissue application a copy of the Court papers raising such defenses. As a minimum, the applicant should call the attention of the Office to the litigation, the existence and nature of any allegations relating to validity and/or "fraud" relating to the original patent, and the nature of litigation materials relating to these issues. Enough information should be submitted to clearly inform the Office of the nature of these issues so that the Office can intelligently evaluate the need for asking for further materials in the litigation. Thus, the existence of supporting materials which may substantiate allegations of invalidity or "fraud" should, at least, be fully described, or submitted. The Office is *not*, of course, interested in receiving voluminous litigation materials which are *not* relevant to the Office's consideration of the reissue application. The status of the litigation should be updated in the reissue application as soon as significant events happen in the litigation.

The Examination of Reissue Applications, Including Those Filed Under 37 CFR 1.175(a)(4)

The examination of reissue applications, including those filed under sub-section (a)(4), will be in accordance with Sections 1401–1401.12, M.P.E.P. Attention is particularly directed to Section 1401.09, M.P.E.P. which refers to the two aspects of reissue examination, i.e., examination in the same manner as an original application and examination for compliance with the reissue statute and rules. The purpose of the present guidelines is to supplement those presently in existence and to emphasize certain points, particularly as they relate to reissue applications filed under sub-section (a)(4).

When examining the reissue application the examiner will consider whether or not applicant, in the reissue oath or declaration, has complied with each of the requirements of 37 CFR 1.175. For example, in all reissue applications, the reissue oath or declaration must comply with the requirements of the first sentence of 37 CFR 1.65. When the reissue application is other than the (a)(4) type, the reissue oath or declaration must comply with the appropriate sub-sections (a)(1) to (a)(3) and sub-sections (a)(5) and (a)(6). When the reissue application is filed under sub-section (a)(4), the reissue oath or declaration must also comply with sub-sections (a)(5) and (a)(6). Thus, all reissue applications must comply with sub-sections (a)(5) and (a)(6). If the examination reveals a lack of compliance with any requirement of Section 1.175, e.g., the requirements of sub-sections (a)(5) and/or (a)(6), a rejection will be made on the basis that the reissue oath or declaration is insufficient. See Section 1401.08, M.P.E.P. Under no circumstances will any reis-

sue application be passed for issue without full compliance with 37 CFR 1.175.

Applications filed under sub-section (a)(4) will not, of course, be passed for issue without amendment, but will be rejected as lacking statutory basis for a reissue if *there are no other grounds for rejection*, since 35 U.S.C. 251 does not authorize reissue of a patent unless the patent is deemed wholly or partly inoperative or invalid. If a reissue filed under sub-section (a)(4) is subsequently amended thereby converting it into an application under sub-sections (a)(1) to (a)(3), *a supplemental reissue oath or declaration must be filed containing the appropriate averments*, If such a proper supplemental oath or declaration is not filed, a rejection will be made on the basis that the reissue oath or declaration is insufficient. The supplemental oath or declaration insures compliance with 35 U.S.C. 251 by providing appropriate averments relating to actual errors rather than possible errors.

If the examiner becomes aware of litigation involving the patent sought to be reissued during examination of the reissue application, and applicant has not made the details regarding that litigation of record in the reissue application, the examiner, in the next office action, will inquire regarding the same. The following paragraph may be used for such an inquiry:

> "It has come to the attention of the examiner that the patent sought to be reissued by this application (is) (has been) involved in litigation. Any documents and/or materials, including the defenses raised against validity, or against enforceability because of fraud or inequitable conduct, which would be material to the examination of this reissue application are required to be made of record in response hereto. See 37 CFR 1.175(b)."

If the additional details of the litigation appear to be material to examination of the reissue application, the examiner may make such additional inquiries as necessary and appropriate under 37 CFR 1.175(b).

However, any application which indicates the existence of *a question* of "fraud" or "violation of the duty of disclosure" will be forwarded to the Office of the Assistant Commissioner for Patents pursuant to Section 721.01, M.P.E.P., as soon as the existence of *such question* is appreciated. For example, any reissue application which seeks reexamination in view of material prior art or other information known before issuance of the patent to a person having a duty under 37 CFR 1.56(a) must be forwarded under Section 721.01, M.P.E.P., to the Assistant Commissioner via the Group Director.

The Filing of Protests Under 37 CFR 1.291

The amendments to Section 1.291 reflected the increased value the Office places on appropriate written protests as an aid in avoiding the issuance of invalid patents. The present supplemental guidelines are in addition to those previously published and referred to above.

The nature of the protest, and the timeliness of its submission, are important factors in determining the consideration which is given the protest, and by whom it is considered. Insofar as the question of timeliness is concerned, the original publication of the rules at 955 O.G. 1054, the earlier Guidelines published at 957 O.G. 11, and Section 1309.02, M.P.E.P. adequately treat this question. Protests should obviously be submitted as early in the examination process as possible in order to be of maximum benefit to the Office in its examination of the application involved.

If the protest is being filed with regard to a reissue application, the protest should be filed within the two-month period following announcement of the filing of the reissue application in the Offical Gazette, if it is at all possible to do so. If, for some reason, the protest of the reissue application cannot be filed within the two-month period provided by 37 CFR 1.176, the protest can be submitted at a later time, but protestor must be aware that reissue applications are "special" and a later filed protest may be received after action by the examiner, if submitted later than the two months provided by 37 CFR 1.176. In the event a protest is intended against a reissue application, but cannot be submitted within the two months provided following the O.G. announcement, the protestor can request an additional specified period within which to file the protest, explaining why the additional time is necessary and the nature of the protest intended. A copy of any such request for additional time to protest a reissue application beyond the two months provided must be served on the reissue applicant. The request for additional time should be directed to the appropriate Group Director. The requests for additional time beyond the two months provided will be *critically reviewed as to demonstrated need* before being granted since the delay of examination of a reissue application of another party is being requested. Accordingly, the requests should be made *only where necessary, for the minimum period required* and with a justification establishing the necessity for the extension.

Any protest filed alleging "fraud" or "violation of the duty of disclosure" should be directed to the attention of the Assistant Commissioner for Patents, Building 3, Room 11A–13. Protests based on grounds other than "fraud" or "violation of the duty of disclosure" should be directed to the attention of the Director of the particular examining group in which the application is pending. If the protestor is unable to specifically identify the application to which the protest is directed, but, nevertheless, believes such an application to be pending, the protest should be directed to the attention of the Assistant Commissioner for Patents, Building 3, Room 11A–13, along with as much identifying data for the application as is available.

As indicated in the earlier publications, e.g., Section 1309.02, M.P.E.P., every effort should be made by a protestor to effect service of the protest upon the attorney or agent of applicant who is of record or upon the applicant. The protest filed in the Office should reflect that service has been made. Only in those instances where service is not possible should the protest be filed in duplicate in order that the Office can attempt service. Of course, the copy served upon applicant or applicant's attorney or agent should be accompanied by a copy of each prior art or other document relied upon in the same manner as required by Section 1.291(a) for the Office copy.

The Examiner's Consideration of Protests

Protests other than those alleging "fraud" or "violation of the duty of disclosure" will be received by, or forwarded to, the Group Director of the examining group where the application is, or may be, pending and then referred to the appropriate examiner. If it is then, or later, discovered that a question of "fraud" or "violation of the duty of disclosure" exists, the application and the protest, will be forwarded to the Office of the Assistant Commissioner for Patents pursuant to Section 721.01, M.P.E.P.

If no allegations or questions of "fraud" or "violation of the duty of disclosure" are found to exist, the examiner will consider the protest and report the results of the consideration to the Group Director. If the protest has been timely submitted, i.e., before final rejection or allowance, the examiner will consider each of the prior art or other documents submitted. At least those prior art documents which the examiner relies on in rejecting claims will be made of record by means of form PTO—892. If the examiner does not cite all of the prior art or other documents of form PTO—892, the examiner will place a notation in the protest paper adjacent to the reference to the documents which will include the examiner's initials and the term "checked."

If the protest is filed after final rejection or allowance of the application, the consideration by the examiner will depend upon the relevance of the prior art documents submitted and the point in time at which they are submitted. Documents which clearly anticipate or render obvious one or more claims will not be knowingly ignored. Prosecution of the application will be reopened where necessary. However, protestor must be aware that the likelihood of consideration by the Examiner decreases as the patent issue date approaches. Accordingly, protests must be filed early in order to ensure their con-

sideration.

If the protest is not accompanied by a copy of each prior art or other document relied upon as required by Section 1.291(a), the protestor cannot be assured that the examiner will consider the missing document. However, if the examiner does so, the examiner will either cite the document on form PTO—892 or place a notation in the protest paper adjacent to the reference to the document which will include the examiner's initials and the term "checked."

If, upon considering the protest or any submissions subsequent thereto, the examiner considers it desirable to obtain applicant's comments on the protest before further action, the examiner will offer applicant an opportunity to file comments within a set period, usually two months.

The following suggested format can be used to offer applicant an opportunity to file comments on the protest:

> "A protest against the issuance of a patent based on this application has been filed under 37 CFR 1.291 on . . . . and a copy (has been indicated as having been served on applicant) (is attached hereto). Any comments or response applicant desires to file before consideration of the protest must be filed by . . . ."

Section 1.291(a) indicates that protests are acknowledged and this acknowledgement will normally be made by the particular office to which the protest is ultimately directed for consideration. Protests alleging "fraud" or "violation of the duty of disclosure" will normally be acknowledged by the Office of the Assistant Commissioner for Patents. Other protests, i.e., those not alleging "fraud" or "violation of the duty of disclosure" will normally be acknowledged by the Group Director of the examining group where the application is, or may be, pending.

If the protest involves an application to which the protestor has access, e.g., a reissue application filed after March 1, 1977, or one in which protestor has been formally granted access, then protestor may monitor the proceedings and file such additional papers as protestor considers appropriate. If protestor has access to the application, protestor may request the Office to supply protestor with copies of Office actions or other documents mailed by the Office. Such a request should be directed to the particular area in which the application is pending, e.g., Office of Assistant Commissioner for Patents, or Director of the particular examining group. The request should explain why protestor needs the copies in question and should indicate an intent on protestor's part to assist the Office in its examination by supplying relevant comments. Normally, the Office will send copies of Office actions to protestors where the protestor indicates an intent to review actions and, if appropriate, comment to the Office on them. However, since protestor has no right to copies of the Office actions or other documents, the granting or denying of such requests will be within the sole discretion of, and for the convenience of the Office.

If the protestor has access to the application, the examiner may communicate with the protestor *in writing* to seek clarification and/or additional information if the examiner considers such clarification and/or additional information necessary to properly consider the protest. The following suggested format can be used by the examiner to seek clarification and/or additional information from a protestor having access to an application:

> "The protest, as filed_____, has been noted. However, clarification and/or additional information is desired. In particular [Examiner explains] any submission of the requested information should be made within ONE MONTH of the date of this letter and the submission must indicate service on applicant."

While the examiner should not normally need clarification and/or additional information from the protestor where the grounds involve only published prior art, e.g., patents, periodicals, etc., under some circumstances it may be necessary for the examiner to seek such clarification and/or additional information. For example, if the date of a reference is in question, or some question of public use is involved, and the information being sought is within the knowledge or control of the protestor, the examiner may find it necessary to communicate with the protestor to obtain the same.

Where the examiner feels that a protestor with access to an application can contribute significantly to the examination process, the protestor may be given a specific period, normally one month, within which to comment on responses submitted by patent applicants to Office actions. Such a comment period should only be provided where it would appear to be of benefit to the examination process and only with the approval of a Supervisory Primary Examiner. Where an applicant agrees to such participation by a protestor or where a Court has suspended litigation for consideration of a related application by the Patent and Trademark Office with an expression of its desire for such protestor participation, it should be more liberally granted.

Where a protestor requests permission to participate in any interview between an applicant and the examiner or requests on its own behalf to have an interview with the examiner, the request should be referred to the Office of the Assistant Commissioner for Patents for action. Normally, protestor participation in interviews with examiners will not be allowed unless special justifying circumstances exist. Where authorized, participation by the protestor in an interview will be according to conditions set down by the Patent and Trademark Office. Normally, any transcript of the interview, if authorized, will be at the expense of the party or parties requesting it and will be arranged by such party or parties. Where Office actions are being sent to a protestor or where a protestor is present for an interview, a copy of the Interview Summary Form and other records made of the interview will be provided to the protestor. Where protestor's participate in an interview, they may submit their own record of the interview which will be made of record in the file.

Interviews relating to a patent application with a protestor will not be permitted without the applicant present.

A protestor with access to an application appealed to the Board of Appeals who intends to file comments or a brief in opposition to appellant's brief should file an indication of such intention within one month after the notice of appeal is filed and serve a copy of the same upon appellant. The indication of intention should state that protestor agrees to file such comments or brief in triplicate, within one month after appellant's brief is filed, and also agrees to serve a copy of the comments or brief upon appellant. If such an indication is not filed and served, or the protestor's comments or brief is not timely filed in triplicate and served, no assurance is given that the Examiner will consider the protestor's comments or brief during the preparation of the Examiner's Answer.

A protestor who participates by the filing of comments or a brief in opposition to appellant's brief may also request, at the time of filing the comments or brief, to appear at any oral hearing. If a protestor does not file such comments or brief, the protestor cannot be present at any oral hearing. If a protestor does file such a request, the Board of Appeals, in its discretion, will decide whether or not the issues on appeal are such that protestor's participation at the hearing would be helpful. The Board of Appeals will notify protestor whether or not the request to appear at the hearing is granted and, if granted, how much time will be permitted. Of course, if appellant does not request an oral hearing, or provides timely notification to the Board and protestor that appellant will not appear, protestor will not be heard.

A copy of any examiner's letter or communication to a protestor will be mailed to applicant at the same time it is mailed to the protestor. While the examiner may communicate *in writing* with a protestor having access to the application, the examiner will *not* communicate orally and protestor must refrain from oral communications with the examiner except to ask purely procedural questions which have no relation to the substance of the pro-

test or the merits of the application, unless specifically authorized *in writing* by the Assistant Commissioner for Patents.

Where the handling of a protest or the handling of a reissue application involved in related litigation requires an inordinately larger than normal amount of work on the part of an examiner and where otherwise warranted, Supervisory Primary Examiners may authorize the use of non-examining time for handling some or all of the examination.

The above guidelines are intended to make clearer the policies of the Patent and Trademark Office in respect to the handling of reissue applications, protests and "fraud" questions. The Office is especially interested in seeing that the consideration of reissue applications and protests is thorough and fair. It is interested in seeing that protestors have an opportunity to participate in the proceedings in the Office to the extent that such participation is helpful and appropriate in each case. It is also greatly interested in the completeness and accuracy of the file record, including indications whether or not prior art references and information mentioned in the record have been reviewed by the examiner.

The present guidelines which will be incorporated into the M.P.E.P. as soon as possible, when considered in conjunction with those previously issued and the M.P.E.P., should answer many of the questions being raised about the revised rules.

DONALD W. BANNER,
Nov. 13, 1978. *Commissioner of Patents & Trademarks.*

[977 O.G. 11]

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(68) Expedited Processing of Reissue Applications and Applications Having Issues of Fraud or Failure to Comply With The Duty of Disclosure

The Patent and Trademark Office has been experiencing increasing delays in the examination of reissue applications and other applications in which charges or questions of fraud or failure to comply with the duty of disclosure have been raised or are apparent on the record. Consideration of these charges involves considerable expenditures of resources and time. They also tend to delay prompt consideration on the merits in view of the prior art, etc. Considerable duplication of effort and expenditures of resources and time also may occur when the Office considers applications in circumstances where the same issues are concurrently being considered in Court.

Deferral of Fraud Issues

Effective immediately, the Office is instituting a policy of delaying consideration of issues of fraud or failure to comply with the duty of disclosure in any application until all other issues are settled.

Accordingly, under this procedure, applications having issues of fraud or failure to comply with the duty of disclosure will continue to be referred to the Office of the Assistant Commissioner for Patents, but will then be promptly returned, along with any appropriate examining instructions, to the Director of the Examining Group for immediate action by the Examiner. Decisions on Petitions to Strike applications pursuant to 37 CFR 1.56(d) will be deferred pending resolution of the patentability issues before the Examiner. Any such Petitions to Strike filed after the Office of the Assistant Commissioner has initially reviewed the application and returned it for immediate action will be acknowledged by the Examining Group Director and action on the Petition will be deferred pending completion of the patentability issues before the Examiner. Examiners will note in their Office actions the existence of issues of fraud or failure to comply with the duty of disclosure without commenting on the substance of such issues and will indicate that the issues will be considered after all other matters have been disposed of. Matters other than fraud or failure to comply with the duty of disclosure raised in a Petition to Strike, e.g., patentability in light of a reference, will be treated by the Examiner or other appropriate official. Petitions relating to procedural matters involving the examination of the applications, e.g., requests for protestor participation in interviews, will be decided by the appropriate Examining Group Director. Applications which have been referred to the Office of the Assistant Commissioner and which are required to be returned thereto before allowance or after abandonment of the application will have a notation placed on the face of the application file by the Office of the Assistant Commissioner requiring such return.

Suspension of Action Where There is Concurrent Litigation

In order to avoid duplication of effort, actions in applications in which there is an indication of concurrent litigation will be suspended automatically unless and until it is evident to the examiner, or the applicant indicates, that: (1) a stay of the litigation is in effect; (2) the litigation has been terminated; (3) there are no significant overlapping issues between the application and the litigation; or (4) it is applicant's desire that the application be examined at that time.

Expedited Examination of Reissues

All reissue applications, except those under suspension because of litigation, will be taken up for action ahead of other "special" applications; this means that all issues not deferred will be treated and responded to *immediately.* Furthermore, reissue applications involved in "stayed litigation" will be taken up for action in advance of other reissue applications.

Insofar as reissue applications for patents in litigation are concerned, the Office is presently considering modifications to the rules to provide for their examination within the two-month waiting period now provided by Section 1.176. Until appropriate modifications are made to the rules, the Office will entertain petitions under 37 CFR 1.183 to waive the delay period of 37 CFR 1.176. In addition, the Office is presently considering requiring the prompt disclosure of the existence of litigation related to a pending application.

Time monitoring systems are being put into effect which will closely monitor the time used by applicants, protestors, and examiners in processing reissue applications of patents involved in litigation in which the court has stayed further action.

Applicants in reissue applications involved in litigation which has been stayed, dismissed, etc. for consideration by the Patent and Trademark Office will normally be given one month to respond to Office actions in those situations where the Office determines that the reissue applicant can readily prepare a response in such time. This one month period may be extended upon a showing of clear justification. Of course, up to three months may be set for response if the Examiner determines such a period is justified.

Applicants and protestors submitting papers for entry in reissue applications of patents involved in litigation are requested to mark the outside envelope and the top right hand portion of the paper with the words *"REISSUE LITIGATION"* and with the unit of the PTO in which the reissue application is located—e.g., Assistant Commissioner for Patents, Board of Appeals or Examining Group. The notations preferably should be written in a bright color with a felt point marker. Papers marked *"REISSUE LITIGATION"* will be given special attention. Also, the PTO will place a prominent notation on the application file to indicate the existence of litigation.

The purpose of these changes is to reduce the time between filing and final action insofar as possible while still giving all parties sufficient time to be heard. This notice is supplemental to, and in some respects modifies, the earlier published notices on this subject and particularly the notice published at 977 O.G. 11 on December 12, 1978.

DONALD W. BANNER,
June 5, 1979. *Commissioner of Patents and Trademarks.*

[983 O.G. 24]

(69) **Prior Art Cited by Patent Offices in Other Countries**

Section 1.56 of Title 37 of the Code of Federal Regulations requires patent applicants and others associated with the prosecution of a patent application before the U.S. Patent and Trademark Office to call to the Office's attention information which is material to examination. Where related or corresponding patent applications have been filed in other countries, prior art may be cited by the Patent Offices of those other countries in connection with the examination of the applications filed there. Where prior art is cited by those other Patent Offices while the U.S. application is pending, citations which are material to examination in this country and known to any of the individuals covered by Section 1.56 must be called to the attention of this Office. Attorneys and agents are reminded of their obligations in this respect.

It is suggested, of course, that such prior art be cited to the U.S. Patent and Trademark Office in a prior art statement which complies with the provisions of Section 1.97–1.99 of 37 CFR.

Apr. 23, 1979. DONALD W. BANNER, *Commissioner of Patents and Trademarks.*

[982 O.G. 36]

DEPARTMENT OF COMMERCE

(70) **Patent and Trademark Office**

37 CFR Part 1

Rules of Practice in Patent Cases; Deposit of Computer Program Listings

Agency: Patent and Trademark Office, Commerce.

Action: Final rule.

Summary: Rules of practice are amended to provide special procedures for presentation of computer program listings in the form of microfiche in patent applications. Use of microfiche is desirable in view of the number of computer program listings being submitted as part of the disclosure in patent applications. Such listings are often several hundred pages in length. By filing and publishing such computer program listings on microfiche rather than on paper, substantial cost savings can result to the applicants, the public, and the Patent and Trademark Office.

Dates: Sections 1.77 and 1.96 effective Jan. 12, 1981. Section 1.21 effective Mar. 13, 1981.

For Further Information Contact: Mr. Louis O. Maassel by telephone at (703) 557-3070 or, for details of the specifications, Mr. J. Kent Hughes at (703) 557-0410, or by mail marked to their attention addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information: This notice changes two rules and adds a new rule to provide suitable procedures for presenting computer program listings where such listings are submitted with applications for patent to fulfill the disclosure requirements of 35 U.S.C. 112.

Classification

This amendment of Part I of Title 37 CFR is deemed significant under procedures established by the Department of Commerce pursuant to Executive Order 12044.

Regulatory Analysis

The Patent and Trademark Office has reviewed the amendment and determined that it will have no potential major economic consequences requiring the preparation of a regulatory analysis under Executive Order 12044.

Background

The notice of proposed rulemaking was published in the Federal Register of June 15, 1977 at 42 FR 30522 and in the Official Gazette of July 5, 1977 at 960 O.G. 2. An oral hearing was held on Sept. 13, 1977.

A computer program listing, as used in these rules, means the printout that lists, in proper sequence, the instructions, routines, and other contents of a program for a computer. The listing may be either in machine or machine-independent (object or source) programming language which will cause a computer to perform a desired task, such as solving a problem, regulating the flow of work in a computer, or controlling or monitoring events. The general description of the computer program listing will appear in the specification while computer program listing may appear either directly or as a microfiche as appendix to the specification and be incorporated into the specification by reference.

Discussion of the Background and Major Issues Involved

The provisions of 37 CFR 1.52 and 1.84 for submitting specifications and drawings on paper have been found suitable for most patent applications. However, when lengthy computer program listings must be disclosed in a patent application in order to provide a complete disclosure, use of paper copies can become burdensome.

The cost of printing long computer programs in patent documents is also very expensive to the Patent and Trademark Office. Likewise, the issue fee, which must be paid by the applicant, is based on the number of pages and may be correspondingly high.

In the past, all disclosures part of a patent application were presented on paper with the exception of microorganisms. Under new section 1.96, several different methods for submitting computer program listings, including the use of microfiche are set forth.

Relatively short computer program listings (10 pages or less) will be submitted on paper and be printed as part of the patent. If the computer program listing is 10 or more pages in length, it may be submitted on either paper or microfiche, although microfiche is preferred.

Copies of publicly available computer program listings will be available from the Patent and Trademark Office at a cost of one dollar per microfiche or on paper at a cost of 30 cents per page. These costs represent the estimated costs to the Office of furnishing the copies.

Response to Public Comments Received

Nine individuals and organizations submitted written comments relating to the proposed rule change. Two additional individuals asked for clarification of certain points at the oral hearing.

All of the suggestions relating to clarification of the rules were adopted.

The proposal to accept microfiche for 10 or less pages of listing was not adopted since such listings cause no serious printing or cost problems. It is not considered to be cost effective to prepare and maintain a microfiche on so few pages.

The suggestion to permit lined paper was not adopted since high-quality reproduction procedures used would pick up such lines.

A number of proposals were directed to permitting listings to be filed on other forms of microfilm and machine readable material. Such proposals were not adopted at this time in view of the difficulty to the public and the office of reading and reproducing such material on a single machine.

The mandatory use of microfiche for listings over 50 pages has been deleted since such a mandatory requirement would conflict with the Patent Cooperation Treaty requirements.

Other Information

The micrographic standards referred to in section 1.96(b)(2) may be obtained from either the National Micrographic Association, 8719 Colesville Rd., Silver Spring, Md., 20910 or the American National Standards Institute, 1430 Broadway, New York, N.Y. 10018.

Amendment of Regulations

For the reasons set out in the preamble and under the authority given to the Commissioner of Patents and Trademarks by 35 USC §§6 and 41, Part 1 of Title 37 CFR is amended as set forth below.

1. Section 1.21 is amended by adding a new paragraph (l) to read as follows:

§1.21 Patent and miscellaneous fees and charges

* * * * *

The fee for obtaining a microfiche copy of an available microfiche, per microfiche $1.00

* * * * *

2. Section 1.77 is amended by revising paragraph (c) to read as follows:

§1.77 Arrangement of application

* * * * *

(c)(1) Cross-reference to related applications, if any.

(2) Reference to a "microfiche appendix" if any. (See Section 1.96(b)). The total number of microfiche and total number of frames should be specified.

* * * * *

3. A new Section 1.96 is added and reads as follows:

§1.96 Submission of computer program listings.

Descriptions of the operation and general content of computer program listings should appear in the description portion of the specification. A computer program listing for the purpose of these rules is defined as a printout that lists in appropriate sequence the instructions, routines, and other contents of a program for a computer. The program listing may be either in machine or machine-independent (object or source) language which will cause a computer to perform a desired procedure or task such as solve a problem, regulate the flow of work in a computer, or control or monitor events. Computer program listings may be submitted in patent applications in the following forms:

(a) *Material which will be printed in the patent.* If the computer program listing is contained on 10 printout pages or less, it must be submitted either as drawings or as part of the specification.

(1) *Drawings.* The listing may be submitted in the manner and complying with the requirements for drawings as provided in Section 1.84. At least one figure numeral is required on each sheet of drawing.

(2) *Specification.* (i) The listing may be submitted as part of the specification in accordance with the provisions of Section 1.52, at the end of the description but before the claims.

(ii) The listing may be submitted as part of the specification in the form of computer printout sheets (commonly 14 by 11 inches in size) for use as "camera ready copy" when a patent is subsequently printed. Such computer printout sheets must be original copies from the computer with dark solid black letters not less than 0.21 cm high, on white, unshaded and unlined paper. The printing on each sheet must be limited to an area 9 inches high by 13 inches wide, and the sheets should be submitted in a protective cover. When printed in patents, such computer printout sheets will appear at the end of the description but before the claims and will usually be reduced about 1/2 in size with two printout sheets being printed as one patent specification page. Any amendments must be made by way of submission of a substitute sheet if the copy is to be used for camera ready copy.

(b) *As an appendix which will not be printed.* If a computer program listing printout is 11 or more pages long, applicants may submit such listing in the form of microfiche, referred to in the specification (see §1.77 (c)(2)). Such microfiche filed with a patent application is to be referred to as a "microfiche appendix." The "microfiche appendix" will not be part of the printed patent. Reference in the application to the "microfiche appendix" should be made at the beginning of the specification at the location indicated in §1.77(c)(2). Any amendments thereto must be made by way of revised microfiche. All computer program listings submitted on paper will be printed as part of the patent.

(1) *Availability of appendix.* Such computer program listings on microfiche will be available to the public for inspection, and paper or microfiche copies thereof will be separately available for purchase, after a patent based on such an application is granted or the application is otherwise made publicly available.

(2) *Submission requirements.* Computer-generated information submitted as an appendix to an application for patent shall be in the form of microfiche in accordance with the standards set forth in the following American National (ANSI) or National Micrographics Association (NMA) Standards (Note: As new editions of these standards are published, the latest shall apply):

ANSI PH 1.28-1976—Specifications for Photographic Film for Archival Records, Silver-Gelatin Type, on Cellulose Ester Base.

ANSI PH 1.41—1976 Specifications for Photographic Film for Archival Records, Silver-Gelatin Type, on Polyester Base.

NMA-MS1 (1971) Quality Standards for Computer Output Microfilm.

ANS1/NMA MS2 (1978) Format and Coding Standards for Computer Output Microfilm.

NMA MS5 (ANSI PH 5-9-1975) Microfiche of Documents.

ANSI PH 2.19 (1959)—Diffuse Transmission Density.

except as modified or clarified below:

(i) Either Computer-Output-Microfilm (COM) output or copies of photographed paper copy may be submitted. In the former case, NMA standards MS1 and MS2 apply; in the latter case, standard MS5 applies.

(ii) Film submitted shall be first generation (camera film) negative appearing microfiche (with emulsion on the back side of the film when viewed with the images right reading).

(iii) Reduction ratio of microfiche submitted should be 24:1 or a similar ratio where variation from said ratio is required in order to fit the documents into the image area of the microfiche format used.

(iv) Film submitted shall have a thickness of at least .005 inches (0.13 mm) and not more than .009 inches (0.23 mm) for either cellulose acetate base or polyester base type.

(v) Both microfiche formats A1 (98 frames, 14 columns x 7 rows) and A3 (63 frames, 9 columns x 7 rows) which are described in NMA standard MS2 (A1 is also described in MS5) are acceptable for use in preparation of microfiche submitted.

(vi) At least the left-most 1/3 (50 mm x 12 mm) of the header or title area of each microfiche submitted shall be clear or positive appearing so that the Patent and Trademark Office can apply serial number and filing date thereto in an eye-readable form. The middle portion of the header shall be used by applicant to apply an eye-readable application identification such as the title and/or the first inventor's name. The attorney's docket number may be included. The final right-hand portion of the microfiche shall contain sequence information for the microfiche, such as 1 of 4, 2 of 4, etc.

(vii) Additional requirements which apply specifically to microfiche of filmed paper copy:

(A) The first frame of each microfiche submitted shall contain a standard test target which contains five NBS Micro-copy Resolution Test Charts (No. 1010A), one in the center and one in each corner. See illustration on page 2 of NMA Recommended Practice MS104, Inspection and Quality Control of First Generation Silver Halide Microfilm. See also paragraph 7 of NMA-MS5.

(B) The second frame of each microfiche submitted must contain a fully descriptive title and the inventor's name as filed.

(C) The pages or lines appearing on the microfiche frames should be consecutively numbered.

(D) Pagination of the microfiche frames shall be from left to right and from top to bottom.

(E) At a reduction of 24:1 resolution of the original mi-

crofilm shall be at least 120 lines per mm (5.0 target) so that reproduction copies may be expected to comply with provisions of paragraph 7.1.4. of NMA Standard MS5.

(F) Background density of negative appearing camera master microfiche of filmed paper documents shall be within the range 0.9 to 1.2 and line density should be no greater than 0.08. The density shall be visual diffuse density as measured using the method described in ANSI Standard PH 2.19.

(G) An index, when included, should appear in the last frame (lower right hand corner when data is right-reading) of each microfiche. See NMA-MS5, paragraph 6.6.

(viii) Microfiche generated by Computer Output Microfilm (COM).

(A) Background density of negative-appearing COM-generated camera master microfiche shall be within the range of 1.5 to 2.0 and line density should be no greater than 0.2. The density shall be visual diffuse density as described in ANSI PH 2.19.

(B) The first frame of each microfiche submitted should contain a resolution test frame in conformance with NMA standard MS1.

(C) The second frame of each microfiche submitted must contain a fully descriptive title and the inventor's name as filed.

(D) The pages or lines appearing on the microfiche frames should be consecutively numbered.

(E) It is preferred that pagination of the microfiche frames be from left to right and top to bottom but the alternative, i.e., from top to bottom and from left to right, is also acceptable.

(F) An index, when included, should appear on the last frame (lower right hand corner when data is right reading) of each microfiche.

(G) Amendment of microfiche must be made by way of replacement microfiche.

SIDNEY A. DIAMOND,
Dec. 19, 1980.

JORDAN J. BARUCH,
Dec. 30, 1980. *Assistant Secretary for Productivity, Technology and Innovation.*

[1003 O.G. 48]

[FR Doc. 81-1012 Filed 1-9-81; 8:45 am]

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(71) Priority Claims Based on Inventors Certificates

Pursuant to the provisions of 35 U.S.C. 119, last paragraph (as amended July 28, 1972), 37 CFR 1.55(c) requires that when an applicant wishes to claim a right of priority on the basis of an application for an inventor's certificate, ". . . the applicant or his attorney or agent, when submitting a claim for such right . . . shall include an affidavit or declaration including a specific statement that, upon an investigation, he has satisfied himself that to the best of his knowledge the applicant, when filing his application for the inventor's certificate, had the option to file an application either for a patent or for an inventor's certificate as to the subject matter of the identified claim or claims forming the basis for the claim of priority."

As such, it has been and remains the position of the Patent and Trademark Office that, in accordance with 35 U.S.C. 119, application for inventors' certificates shall give rise to a right of priority only when the country in which they are filed gives to applicants, at their discretion, the right to apply, on the same invention, either for a patent or for an inventor's certificate. The affidavit or declaration specified under 37 CFR 1.55(c) is only required for the purpose of ascertaining whether, in the country where the application for an inventor's certificate originated, this option generally existed for applicants with respect to the particular subject matter of the invention involved. The requirements of 35 U.S.C. 119 and 37 CFR 1.55(c) are not intended, however, to probe into the eligibility of the particular applicant to exercise the option in the particular priority application involved.

It is recognized that certain countries that grant inventors' certificates also provide by law that their own nationals who are employed in state enterprises may only receive inventors' certificates and not patents on inventions made in connection with their employment. This will not impair their right to be granted priority in the United States based on the filing of the inventor's certificate.

Accordingly, affidavits or declarations filed pursuant to 37 CFR 1.55(c) need only show that in the country in which the original inventor's certificate was filed, applicants generally have the right to apply at their own option either for a patent or an inventor's certificate as to the particular subject matter of the invention.

C. MARSHALL DANN,
Aug. 17, 1977. *Commissioner of Patents and Trademarks.*

[962 O.G. 14]

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(72) Requirements for Priority Documents, Priority Based on Application for Industrial Design

In the Federal Republic of Germany, an application for protection of an industrial design may be accompanied by either a model or a drawing. It is understood that German residents file such applications with their local judicial authority ("Amtsgericht") rather than with the German Patent Office in Munich.

Questions have been raised in this connection as to:

(1) What sort of priority document under 35 U.S.C. 119 is required when the original filing has comprised a model rather than a drawing, and

(2) Whether it is necessary where the original filing was with a local judicial authority to obtain also a certificate from the national patent office.

As to the first question, the Patent and Trademark Office will receive under 35 U.S.C. 119, as evidence of an earlier filed design application which included the deposit of a model, drawings or acceptable photographs of the deposited model faithfully reproducing the design embodied therein together with other required information, certified by an official of the court or office with which the application was originally filed.

No additional certification by the national patent office will be required. Article 4D(3) of the Paris Convention refers to certification ". . . by the authority which received such application . . ." so the reference in 35 U.S.C. 119 to "patent office" will be construed to extend also to the authority in charge of the design register.

C. MARSHALL DANN,
Aug. 15, 1977. *Commissioner of Patents and Trademarks.*

[962 O.G. 14]

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(73) Right of Priority (35 U.S.C. 119) Based on a Foreign Application Filed Under a Bilateral or Multilateral Treaty

Under Article 4A of the Paris Convention for the Protection of Industrial Property (21 UST 1583; 24 UST 2140; TIAS 6923, 7727; 852 O.G. 511) a right of priority may be based either on an application filed under the national law of a foreign country adhering to the Convention or on a foreign application filed under a bilateral or multilateral treaty concluded between two or more such countries. Examples of such treaties are the Hague Agreement Concerning the International Deposit of Industrial Designs, the Benelux Designs Convention, and the Libreville Agreement of September 13, 1962, relating to the creation of an African and Malagasy Industrial Property Office. The Convention on the Grant of European Patents and the Patent Cooperation Treaty will be further examples of such treaties once they enter into force.

The Priority Claim

In claiming priority of a foreign application previously filed under such a treaty, certain information

must be supplied to the Patent and Trademark Office. In addition to the application number and the date of the filing of the application, the following information is required: (1) the name of the treaty under which the application was filed, (2) the name of at least one country other than the United States in which the application has the effect of, or is equivalent to, a regular national application, and (3) the name and location of the national or intergovernmental authority which received such application.

Certification of the Priority Papers

Section 119 of Title 35 of the United States Code requires the applicant to furnish a certified copy of priority papers. Certification by the authority empowered under a bilateral or multilateral treaty to receive applications which give rise to a right of priority under Article 4A(2) of the Paris Convention will be deemed to satisfy the certification requirement.

C. MARSHALL DANN,
Aug. 9, 1977. *Commissioner of Patents and Trademarks.*

[962 O.G. 2]

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(74) Abstract of the Disclosure

This notice is intended to announce a change in the examining practice concerning review of the abstract for compliance with the guidelines set forth in MPEP 608.01(b).

At present, the examiner is instructed to review the abstract for compliance with the guidelines when passing the case to issue, making any necessary revisions by examiner's amendment. This policy has led to the necessity for many changes by the examiner which could have and should have been made at an earlier point in the prosecution. For example, abstracts in excess of the 250 word limit require cancellation and/or rewriting of portions thereof. This 250 word limit is strictly enforced since it represents a requirement of the printing process and the printed patent format designed to present a maximum amount of information concerning a patent on a single page.

Effective immediately, examiners are to require correction of the abstract at the earliest point in the prosecution that non-compliance with the guidelines is detected. Applicants are expected to observe the guidelines in drafting the abstract and correct any defect that is identified in an Office action. Applicants are encouraged to make the necessary corrections not only to relieve the examiner of this burden, but also to help avoid any potential conflict with respect to altering the scope of the enabling disclosure. In this regard, it should be noted that the abstract of the disclosure has been interpreted to be a part of the specification for the purposes of compliance with paragraph 1 of 35 USC 112. *In re Armbruster,* 512 F2d 676, 185 USPQ 152 (CCPA 1975). However, although it is preferable for applicant to make any necessary changes, the examiner will retain the authority and responsibility for reviewing, editing and revising the abstract of the disclosure at the time of allowance of the application to assure compliance with the guidelines.

Section 608.01(b) of the Manual of Patent Examining Procedures will be amended appropriately.

WILLIAM FELDMAN,
Dec. 30, 1977. *Deputy Assistant Commissioner for Patents.*

[967 O.G. 2]

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(75) Supplemental Guidelines for The Implementation of 37 CFR 1.109—Reasons for Allowance

A recent review of recorded statements of reasons for allowance indicates the need for a better understanding regarding implementation of new Rule 109 (37 CFR 1.109).

These guidelines are supplemental to those published in the **Official Gazette** at 957 O.G. 11 on April 12, 1977 and amplified in Section 1302.14 MPEP, Rev. 52, April 1977.

In determining whether reasons for allowance should be recorded the primary consideration lies in the first sentence of the Rule.

> "If the examiner believes that the record of the prosecution *as a whole* does not make clear his reasons for allowing a claim or claims, the examiner may set forth such reasoning." (Emphasis added.)

In most cases the examiner's actions and the applicant's response make evident the reasons for allowance, satisfying the "record as a whole" proviso of the rule. This is particularly true when applicant fully complies with 37 CFR 1.111(b) and (c), 37 CFR 1.119 and 37 CFR 1.133(b). Thus where the examiner's actions clearly point out the reasons for rejection and the applicant's response explicitly represents reasons why claims are patentable over the reference, the reasons for allowance are in all probability evident from the record and no statement should be necessary. Conversely, where the record is not explicit as to reasons, but allowance is in order, then a logical extension of 37 CFR 1.111, 1.119 and 1.133 would dictate that the examiner should make reasons of record and such reasons should be specific.

Where specific reasons are recorded by the examiner, care must be taken to insure that such reasons are accurate, precise and do not place unwarranted interpretations, whether broad or narrow, upon the claims. The examiner should keep in mind the possible misinterpretations of his statement that may be made and its possible estoppel effects. Each statement should include at least: (1) the major difference in the claims not found in the prior art of record, and (2) the reasons why that difference is considered to define patentably over the prior art if either of these reasons for allowance is not clear in the record. The statement is not intended to necessarily state all the reasons for allowance or all the details why claims are allowed and should not be written to specifically or impliedly state that all the reasons for allowance are set forth.

Under the rule, the examiner must make a judgement of the individual record to determine whether or not reasons for allowance should be set out in that record. These guidelines, then, are intended to aid the examiner in making that judgement. They comprise illustrative examples as to applicability and appropriate content. They are not intended to be exhaustive.

Examples of When It Is Likely That a Statement Should Be Added to the Record

1. Claims are allowed on the basis of one (or some) of a number of arguments and/or affidavits presented and a statement is necessary to identify which of these were persuasive, for example:
   - *a.* When the arguments are presented in an appeal brief.
   - *b.* When the arguments are presented in an ordinary response with or without amendment of claims.
   - *c.* When both an affidavit under 37 CFR 1.131 and arguments under 102 and 103 are presented.
2. First action issue:
   - *a.* Of non-continuing application wherein claims are very close to cited prior art and differences have not been discussed elsewhere.
   - *b.* Of continuing applications wherein reasons for allowance are not apparent from the record in the parent case or clear from preliminary filled matters.
3. Withdrawal of a rejection for reasons not suggested by applicant, for example:
   - *a.* As a result of an appeal conference.
   - *b.* When applicant's arguments have been misdirected or are not persuasive alone and the Examiner comes to realize that more cogent argument is available.
   - *c.* When claims are amended to avoid a rejection under 35 USC 102 but arguments (if any) fail to

address the question of obviousness.

4. Allowance after remand from the Board of Appeals.

5. Allowance coincident with the citation of newly found references that are very close to the claims, but claims are considered patentable thereover:

a. When reference is found and cited (but not argued) by applicant.
b. When reference is found and cited by Examiner.

6. Where the reasons for allowance *are* of record but in the Examiner's judgement, are unclear (e.g. spread throughout the file history) so that an unreasonable effort would be required to collect them.

7. Allowance based on claim interpretation which might not be readily apparent, for example:

a. Article claims in which method limitations impart patentability.
b. Method claims in which article limitations impart patentability.
c. Claim is so drafted that "non-analogous" art is not applicable.
d. Preamble or functional language "breathes life" into claim.

Examples of Statements of Suitable Content

1. The primary reason for allowance of the claims is the inclusion of .03 to .05 percent nickel in all the claims. Applicant's second affidavit, in example 5 shows unexpected results from this restricted range.
2. During two telephonic interviews with applicant's attorney, Mr.—on 5/6 and 5/10/77, the Examiner stated that Applicant's remarks about the placement of the primary teaching's grid member were persuasive, but he pointed out that applicant did not claim the member as being within the reactor. Thus, an amendment doing such was agreed to.
3. The instant application is deemed to be directed to an unobvious improvement over the invention patented in Pat. No. 3,953.224. The improvement comprises baffle means *12* whose effective length in the extraction tower may be varied so as to optimize and to control the extraction process.
4. Upon reconsideration, this application has been awarded the effective filing date of S.N. _____. Thus the rejection under 35 USC 102(d) and 103 over Belgian Patent No. 757,246 is withdrawn.
5. The specific limitation as to the pressure used during compression was agreed to during the telephone interview with applicant's attorney. During said interview, it was noted that applicants contended in their amendment that a process of the combined applied teachings could not result in a successful article within the amended pressure range. The Examiner agreed to rely on this statement (see page 3, bottom, of applicant's amendment), and the case was allowed.
6. In the Examiner's opinion, it would not be obvious to a person of ordinary skill in the art first to eliminate one of top members 4, second to eliminate plate 3, third to attach remaining member 4 directly to tube 2 and finally to substitute this modified handle for the handle 20 of Nania (see Fig. 1) especially in view of applicant's use of term "consisting."

Examples of Statements That Are Not Suitable as to Content

1. The 3 roll press couple has an upper roll 36 which is swingably adjustable to vary the pressure selectively against either of the two lower rolls. (Note: The significance of this statement may not be clear if no further explanation is given.)
2. The main reasons for allowance of these claims are applicant's remarks in the appeal brief and an agreement reached in the appeals conference.
3. The instant composition is a precursor in the manufacture of melamine resins. A thorough search of the prior art did not bring forth any compositions which corresponds to the instant compositions. The Examiner in the art also did not know of any art which could be used against the instant composition.
4. Claims 1–6 have been allowed because they are believed to be both novel and unobvious.

The examiner should *not* include in his statement any matter which does not relate directly to the reasons for allowance. For example:

5. Claims 1 and 2 are allowed because they are patentable over the prior art. If applicants are aware of better art than that which has been cited, they are required to call such to the attention of the Examiner.
6. The reference Jones discloses and claims an invention similar to applicant's. However, a comparison of the claims, as set forth below, demonstrates the conclusion that the inventions are non-interfering.

WILLIAM FELDMAN,
Jan. 24, 1978. *Deputy Assistant Commissioner for Patents.*

[968 O.G. 6]

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(76) **Practice/Re: New Grounds of Rejection After Appeal Brief Has Been Filed**

A new practice has been implemented in the Patent Examining Corps to promote uniformity and adherence to guidelines in situations where a new ground of rejection is made in an Office action after an appeal brief has been filed. Under this practice Supervisory Patent Examiner approval is required for any new ground of rejection made after the filing of an Appeal Brief. This requirement extends to new grounds of rejection made either in an examiner's answer or in an Office action reopening prosecution. Evidence of that approval should appear on applicant's copy of the Office action or answer as well as the record copy. Consultation with or approval by the Group Director is no longer required in these situations.

This new practice does not alter the existing guidelines for reopening prosecution (MPEP) 706.7(e) or for making a new ground of rejection in an examiner's answer (MPEP 1208.01). Appropriate modification will be made to applicable Sections of the Manual of Patent Examining Procedure in a future revision.

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

[970 O.G. 94 (5-23-78)]

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(77) **Commercial Success and Other Considerations Bearing on Obviousness**

In order to clarify Office practice relative to considerations of commercial success and other items bearing on obviousness, the following changes are made in the Manual of Patent Examing Procedure.

In section 716, subsection 4, change the sub-title and first paragraph to read as follows:

4. *Commercial Success and Other Considerations Bearing on Obviousness*

Affidavits or declarations submitting evidence of commercial success, long-felt but unsolved needs, failure of others, etc., must be considered by the Examiner in determining the issue of obviousness of claims for patent-ability under 35 U.S.C. 103. Such evidence might be utilized to give light to circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or unobviousness, such evidence may have relevancy, *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966) ; *In re Palmer.* 172 USPQ 126, 451 F.2d 1100 (CCPA 1971) ; *In re Fielder and Underwood,* 176 USPQ 300, 471 F.2d 640 (CCPA 1973). The *Graham* v. *John Deere* pronouncements on

the relevance of commercial success, etc. to a determination of obviousness were not negated in *Sakraida* v. *Ag Pro*,425 U.S. 273, 189 USPQ 449 (1976) or *Andersons Black Rock, Inc.* v. *Pavement Salvage Co., Inc.*, 396 U.S. 57, 163 USPQ 673 (1969), where reliance was placed upon *A & P Tea Co.* v. *Supermarket Corp.*, 340 U.S. 147 87 USPQ 303 (1950). See *Dann* v. *Johnston*, 425 U.S. 219, 189 USPQ 257 (1976), at 261, footnote 4.

The weight attached to evidence of commercial success, etc. by the Examiner will depend upon its materiality to the issue of obviousness and the amount and nature of the evidence. Note the great reliance apparently placed on this type of evidence by the Supreme Court in upholding the patent in *United States* v. *Adams*, 383 U.S. 39, 148 USPQ 479 (1966).

Evidence of commercial success, etc. must be commensurate in scope with the scope of the claims [*In re Tiffin*, 448 F.2d. 791. 171 USPQ 294 (1971)]. Further in considering evidence of commercial success, care should be taken to evaluate to the extent possible from the evidence submitted, whether the commercial success alleged is directly derived from the invention claimed, in a marketplace where the consumer is free to choose on the basis of objective principles, and that such success is *not* the result of heavy promotion or advertising, shift in advertising consumption by purchasers normally tied to applicant or assignee, or other business events extraneous to the merits of the claimed invention, etc. [*In re Mageli, et al.* 176 USPQ 305, (CCPA 1973)]; [*In re Noznick, et al*, 178 USPQ 43, (CCPA 1973)].

Similarly in considering evidence of longfelt but unsolved needs and failure of others, care should be taken to determine whether such failures were due to lack of interest or appreciation of an invention's potential or marketability rather than want of technical know-how [*Scully Signal Co.* v. *Electronics Corp. of America*, 196 USPQ 657 (1st Cir. 1977)].

In section 716, subsection 4, add the following as the last paragraph:

If, after evaluating the evidence, the examiner is still not convinced that the claimed invention is patentable, his action should include a simple statement to that effect, identifying the reason(s) (e.g., evidence of commercial success not convincing, the commercial success not related to the technology, etc.).

RENE D. TEGTMEYER,
July 10, 1978. *Assistant Commissioner for Patents.*

[973 O.G. 34]

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(78) Handling of Dependent Claims by the Examiner

Effective immediately, the following practice will be followed by patent examiners when making reference to a dependent claim—either singular or multiple. The new practice is intended to simplify and streamline our current practice (MPEP 608.01(n), Revision 55, January 1978) which experience indicates was unnecessarily burdensome in many cases.

1. When identifying a singular dependent claim which does not include a reference to a multiple dependent claim, either directly or indirectly, reference should be made only to the number of the dependent claim.
2. When identifying the embodiments included within a multiple dependent claim, or a singular dependent claim which includes a reference to a multiple dependent claim, either directly or indirectly, each embodiment should be identified by using the number of the claims involved, starting with the highest, *to the extent necessary* to specifically identify each embodiment.
3. When all embodiments included within a multiple dependent claim or a singular dependent claim which includes a reference to a multiple dependent claim, either directly or indirectly, are subject to a common rejection, objection or requirement, reference may be made only to the number of the dependent claim.

The following table illustrates the intended differences between current and the revised practice where each embodiment of each claim must be treated on an individual basis:

Claim Number	Claim Dependency	Identification: Current Practice	Identification: Revised Practice
1	Independent	1	1
2	Depends from 1	2/1	2
3	Depends from 2	3/2/1	3
4	Depends from 2 or 3	4/2/1	4/2
		4/3/2/1	4/3
5	Depends from 3	5/3/2/1	5
6	Depends from 2, 3 or 5	6/2/1	6/2
		6/3/2/1	6/3
		6/5/3/2/1	6/5
7	Depends from 6	7/6/2/1	7/6/2
		7/6/3/2/1	7/6/3
		7/6/5/3/2/1	7/6/5

When all embodiments in a multiple dependent claim situation (claims 4, 6 and 7 above) are subject to a common rejection, objection or requirement, reference may be made only to the number of the individual dependent claim. For example, if 4/2 and 4/3 were subject to a common ground of rejection, reference should be made only to claim 4 in the statement of that rejection.

The provisions of 35 USC 132 require that each Office action make it explicitly clear what rejection, objection and/or requirement is applied to each claim embodiment.

WILLIAM FELDMAN,
Oct. 17, 1978. *Deputy Assistant Commissioner.*

[976 O.G. 128]

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(79) Microorganisms—Patentable Subject Matter

The decision of the Supreme Court in *Diamond* v. *Chakrabarty* (206 U.S.P.Q. 193) held that microorganisms produced by genetic engineering are not excluded from patent protection by 35 U.S.C. §101. It is clear from the Supreme Court decision that the question of whether or not an invention embraces living matter is irrelevant to the issue of patentability.

Accordingly, the Patent and Trademark Office is now examining patent applications including claims to microorganisms which had been under suspension. Assuming that the products involved were the result of human intervention and were not products of nature, such claims will not be rejected under 35 U.S.C. §101 as directed to unpatentable subject matter.

SIDNEY A. DIAMOND,
July 29, 1980. *Commissioner of Patents and Trademarks.*

[997 O.G. 24]

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(80) Department of Commerce
Patent and Trademark Office
Designation of International Depository Authorities under the Budapest Treaty

The Budapest Treaty and the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure came into force on Aug. 19, 1980 with respect to the United States, Bulgaria, France, Hungary, and Japan. A copy of the Treaty was published in the *Official Gazette* on Aug. 23, 1977 (961 O.G. 21–26).

This Treaty authorizes each State for which the Treaty is in effect to designate a depository on its territory to serve as an international depository authority. More than one depository may be designated. Each such depository will be authorized to receive and

store deposits, and dispense samples thereof, in compliance with the Treaty and the patent laws of each State adhering thereto. The Treaty is open for adherence by any member State of the Paris Union for the Protection of Industrial Property.

The Commissioner of Patents and Trademarks hereby solicits requests from private and public depositories located in the United States to serve as international depository authorities. Requests should be addressed to: Sidney A. Diamond, Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Each request must explain and, to the extent practicable, provide evidence of the depository's capacity to meet the obligations of the Treaty. Such request must also include an offer by the depository to assume the cost of transferring deposits made under the Treaty to another international depository authority in the event of default of any of its Treaty obligations. The availability of funds for such transfer, if needed, must be available through a bond, special reserve fund, escrow or other means judged suitable by the Commissioner.

Requests will be promptly evaluated by the Commissioner of Patents and Trademarks, and each requesting depository promptly notified of the decision reached. Questions or inquiries concerning this notice may be addressed to the Office of Legislation and International Affairs, at the following address: Box 4, Commissioner of Patents and Trademarks, Washington, D.C. 20231. The telephone number of the Office of Legislation and International Affairs is (703) 557-3065.

The World Intellectual Property Organization, in Geneva, Switzerland, the Secretariat for the Paris Union, has provided a memorandum explaining the role and obligations of international depository authorities. This memorandum is reproduced below for the guidance of depositories in requesting recognition as an international depository authority.

MEMORANDUM

For the purposes of prospective international depositary authorities under the Budapest Treaty

Introduction

1. This memorandum contains informations for the benefit of any depositary institutions (culture collections) that may wish to become "international depositary authorities" under the Budapest Treaty on the International Recognition of the Deposit of Micro-organisms for the Purposes of Patent Procedure (done at Budapest on Apr. 28, 1977). Its brevity is such that it cannot be exhaustive. Any interested person requiring full information should refer to the relevant provisions of the Budapest Treaty and the Regulations under it (any reference hereinafter to an "Article" or to a "Rule" is a reference to an Article of the Budapest Treaty or to a Rule of the Regulations under it).

Objectives of the Budapest Treaty

2. Disclosure of the invention is a generally recognized requirement for the grant of patents (for the purposes of this memorandum, the word "patent" also covers other titles of protection, such as inventors' certificates). Normally, an invention is disclosed by means of a written description. Where an invention involves the use of a microorganism that is not available to the public, such a description is not sufficient for disclosure, since the invention could not be used by a person skilled in the art. That is why in the patent procedure of an increasing number of countries it is necessary not only to file a written description but also to deposit, with a depositary institution, a sample of the microorganism. When protection for the invention is sought in several countries, the complex and costly procedures of the deposit of the microorganism might have to be repeated in each of those countries. The objective of the Budapest Treaty is precisely to obviate such multiple deposits: under the Treaty a single deposit with one "international depositary authority" is sufficient for the purposes of patent procedure before the industrial property offices of all Contracting States, and of inter-governmental organizations granting regional patents which have declared that they recognize the effects of the Treaty (Articles 3(1)(a) and 9(1)(a)).

General Remarks on International Depositary Authorities

3. "International depositary authorities" are depositary institutions that have acquired the status of international depositary authorities. To obtain this status, a depositary institution has to be located on the territory of a Contracting State or of a member State of one of the organizations referred to in the preceding paragraph, and has to benefit from "assurances" furnished by that Contracting State or organization to the effect that the institution complies and will continue to comply with the requirements referred to in paragraph 5 below (Article 6(1)). The action for acquiring this status is taken by the State or organization concerned (Article 7 and Rule 3). There is nothing to prevent it from making more than one depositary institution acquire such status: it is therefore possible for there to be several international depositary authorities located on the territory of one and the same State.

4. An international depositary authority can lose its status either entirely (in which case "termination of status" is spoken of) or partly, in other words in respect of certain types of microorganisms only (in which case "limitation of status" is spoken of). Loss of the status occurs if the State or organization whose action brought about the acquisition of the status denounces the Treaty or withdraws the declaration of recognition of the effects of the Treaty (in which case the loss of status can only be total), or if the State or organization withdraws its assurances regarding the international depositary authority, or again by virtue of a decision of the Assembly of Contracting States taken at the request of another Contracting State or another organization (Articles 8, 9(4) and 17(4); Rule 4).

Requirements Which Have to be Met by International Depositary Authorities

5. The requirements referred to in paragraph 3 above which a depositary institution has to meet in order to become a depositary authority are the following (Article 6(2) and Rule 2):

(a) The institution has to have a continuous existence. It has to be impartial and objective—which means among other things that it has to be free of any dependence on interests that are liable to prejudice the disinterested performance of its functions—and it has to be available, for the deposit of microorganisms, to any depositor under the same conditions. These requirements, which in fact seem self-evident, are designed to give the public in general and depositors in particular fundamental guarantees of reliability as to the smooth operation of the system. On the other hand, the legal status of the institution is irrelevant: it may be either public or private.

(b) The institution has to have the necessary staff and facilities to perform its scientific and administrative tasks, which consist among other things in:

(i) accepting for deposit any or certain kinds of microorganisms;

(ii) examining the viability of the microorganisms deposited with it and issuing a receipt to the depositor and any required viability statement (see paragraphs 7 and 8 below);

(iii) storing the deposited microorganism for at least 30 years (Rule 9(1)) in such a way as to keep them viable and uncontaminated;

(iv) providing for sufficient safety measures to minimize the risk of losing the deposited microorganisms,

(v) complying with respect to the microorganisms deposited under the Treaty with the requirement of secrecy which means giving no information to anyone on the question whether a microorganism has been thus deposited and giving no information to anyone (except to a person who is entitled to a sample—see paragraph

10 below) on any microorganism thus deposited (Rule 9(2));

(vi) furnishing, rapidly and in an appropriate manner, samples of the deposited microorganisms to all those who are entitled to such samples (see paragraph 10 below).

Handling of Microorganism Deposits by the International Depositary Authority

6. *Reception of the microorganism.* The international depositary authority may require that the microorganism be deposited in an appropriate form and quantity, and that it be accompanied by a form established by that authority. In such a case, the said authority has to communicate its requirements (and any amendments to them) to the International Bureau in order that the latter may communicate them to all the depositors concerned (Rules 6.3 and 13.2(b)(v)). When it receives the microorganism, the international depository authority notes the date of receipt of the deposit and gives it an accession number (Rule 7.3(iii) and (v)). It issues a receipt to the depositor attesting the receipt and acceptance of the deposit (Rule 7). The model of the international form for the receipt, the use of which will be mandatory, will be established by the Director General of WIPO and communicated to all international depositary authorities.

7. *Viability test.* The international depositary authority promptly tests the viability of the microorganism; it also undertakes viability tests at reasonable intervals, depending on the kind of microorganism and its possible storage conditions, or at any time, if necessary for technical reasons or at the request of the depositor (Rule 10.1)

8. *Viability statement.* The international depositary authority issues a statement concerning the viability of the microorganism to the depositor or to any person receiving a sample of the microorganism (see paragraph 10 below) (Rule 10.2). The model of the international form for the viability statement, the use of which is mandatory, will be established by the Director General of WIPO and communicated to all international depositary authorities.

9. *Storage of the microorganism.* The international depositary authority stores the microorganism for a period of at least 30 years after the date of its deposit, or until five years have elapsed without its having received a request for a sample, the period expiring later being applicable (Rule 9.1). It complies with the requirement of secrecy at all times (see paragraph 5(v) above). Where it cannot furnish samples of the deposited microorganism for any reason, it notifies the depositor of the fact, indicating the reason and informing him that he is entitled to make a new deposit (Article 4).

10. *Furnishing of samples.* The Regulations contain detailed provisions specifying who is entitled to receive samples of the microorganism, and when (Rule 11). The depositor himself is entitled to receive a sample at any time. He may authorize third parties to have samples furnished to them, whereupon the third parties receive a sample on presentation of their authorizations. Any industrial property office to which the Treaty applies may receive a sample on request if it needs the microorganism for the purposes of a patent procedure. Any other person may obtain a sample on request if an industrial property office to which the Treaty applies certifies that, under the applicable law, that person has a right to a sample of the microorganism concerned; the Regulations specify in detail the certification procedure. The use of a form (whose contents will be established by the Assembly and communicated by the International Bureau to all international depositary authorities) is mandatory for the request and certification. There is an alternative procedure wherey the industrial property office from time to time communicates to international depositary authorities lists of the accession numbers given to the deposit of the microorganisms referred to in the patents granted and published by it; the effect of this communication is to authorize those authorities to furnish samples of the microorganisms to anyone. It should be stressed that it follows from the foregoing that the international depositary never has to decide itself whether it has the right to furnish a sample since it only does so if it has the authorization of the depositor or of an industrial property office. The international depositary authority furnishes the sample in a container marked with the accession number given to the deposit and accompanied by a copy of the receipt for the deposit. It notifies the depositor of the furnishing of the sample.

11. *Communication of the scientific description and/or proposed taxonomic designation.* If the depositor has indicated a scientific description and/or proposed a taxonomic designation of the deposited microorganism, the international depositary authority must communicate it, on request, to any person entitled to receive a sample of the said microorganism (Rule 7.6).

12. *Fees.* For the procedure under the Treaty and the Regulations, the international depositary authority has the right to charge a fee in certain cases (specified in Rule 12.1). The two main fees are the fee for the storage of the microorganism (which is a single fee for the entire period of storage) and the fee for the furnishing of a sample (the furnishing of samples to industrial property offices is free of charge, however). The international depositary authority fixes the amounts of fees at its discretion, but they must not vary on account of the nationality or residence of the persons who have to pay them.

July 14, 1978.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

[999 O.G. 2]

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(81) **Entry Into Force of the Budapest Treaty**

The Patent and Trademark Office announces the entry into force on Aug. 19, 1980 of the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure with respect to the United States, Hungary, Bulgaria, France and Japan. A copy of the Treaty was published in the Official Gazette on Aug. 23, 1977 (961 O.G. 21–36).

Following entry into force of the Treaty, each state adhering or acceding thereto will be authorized to nominate depositories on its territory to serve as international depository authorities. Upon compliance with certain procedural steps set forth in the Treaty, each such depository will be designated an international depository authority.

No depository in the United States or elsewhere has yet been nominated or designated to serve as an international depository authority. It is expected, however, that some depositories will shortly be designated both in the United States and other States adhering to the Treaty. Public notice will be provided of the designation of each international depository authority and its requirements for patent deposits.

An application for a patent in any adhering States involving the action of a microorganism, for which a deposit is required, may make the required deposit in any international depository authority. The fact and date of making the deposit will be recognized for all patent purposes in each State adhering to the Treaty. No further deposit will be required for national patent processing or enforcement, provided a deposit is properly made under the provisions of the Treaty.

An application for a United States patent will not be required to proceed under the provisions of the Budapest Treaty, however. Such an applicant may rely instead on a deposit made in any depository meeting the requirements set forth in *In re Argoudelis, et al.*, 168 USPQ 99 (CCPA, 1970) and reprinted in section 608.01(p), Manual of Patent Examining Procedure.

Questions or information regarding the Budapest Treaty may be directed to the Office of Legislation and International Affairs, at the following address: Box 4, Commissioner of Patents and Trademarks, Washington,

D.C. 20231. The telephone number of the Office of Legislation and International Affairs is (703) 557-3065.

SIDNEY A. DIAMOND,
July 14, 1980. *Commissioner of Patents and Trademarks.*

JORDAN J. BARUCH,
July 16, 1980. *Assistant Secretary for Productivity, Technology and Innovation.*

[997 O.G. 10]

DEPARTMENT OF COMMERCE

(82) **Patent and Trademark Office**

Recognition of United States Depository as an International Depository Authority Under the Budapest Treaty

As provided in Article 7 of the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure, the United States announces recognition of the American Type Culture Collection, Rockville, Md., as an international depository authority. The communication of the Director General of the World Intellectual Property Organization according this recognition as of Jan. 31, 1981 follows:

SIDNEY A. DIAMOND,
Dec. 30, 1980. *Commissioner of Patents and Trademarks.*

[1002 O.G. 116]

BUDAPEST Notification No. 11

BUDAPEST TREATY ON THE INTERNATIONAL RECOGNITION OF THE DEPOSIT OF MICROORGANISMS FOR THE PURPOSES OF PATENT PROCEDURE

Communication of the United States of America Relating to the Acquisition of the Status of International Depositary Authority by the American Type Culture Collection

The Director General of the World Intellectual Property Organization (WIPO) presents his compliments to the Minister for Foreign Affairs and has the honor to notify him of the receipt, on Nov. 17, 1980, of a written communication from the Government of the United States of America, relating to the American Type Culture Collection, indicating that the said depositary institution is located on the territory of the United States of America and including a declaration of assurances to the effect that the said institution complies and will continue to comply with the requirements concerning the acquisition of the status of international depositary authority as specified in Article 6(2) of the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure, done at Budapest on Apr. 28, 1977.

The American Type Culture Collection will acquire the status of international depositary authority under the said Treaty as from Jan. 31, 1981, the date of publication of the said communication in the Jan. 1981 issue of *Industrial Property/La Propriete industrielle* (see Article 7(2) of the said Treaty).

Dec. 3, 1980.

DEPARTMENT OF COMMERCE

(83) **Patent and Trademark Office**

Recognition of United States Depository as an International Depository Authority Under the Budapest Treaty

As provided in Article 7 of the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure, the United States announces recognition of the Agricultural Research Culture Collection, Peoria, Ill., as an international depository authority. The communication of the Director General of the World Intellectual Property Organization according this recognition as of Jan. 31, 1981 follows:

SIDNEY A. DIAMOND,
Dec. 30, 1980. *Commissioner of Patents and Trademarks.*

BUDAPEST Notification No. 12

BUDAPEST TREATY ON THE INTERNATIONAL RECOGNITION OF THE DEPOSIT OF MICROORGANISMS FOR THE PURPOSES OF PATENT PROCEDURE

Communication of the United Stqtes of America Relating to the Acquisition of the Status of International Depositary Authority by the Agricultural Research Culture Collection

The Director General of the World Intellectual Property Organization (WIPO) presents his compliments to the Minister for Foreign Affairs and has the honor to notify him of the receipt, on Dec. 2, 1980, of a written communication from the Government of the United States of America, relating to the Agricultural Research Culture Collection, indicating that the said depositary institution is located on the territory of the United States of America and including a declaration of assurances to the effect that the said institution complies and will continue to comply with the requirements concerning the acquisition of the status of international depositary authority as specified in Article 6(2) of the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure, done at Budapest on Apr. 28, 1977.

The Agricultural Research Culture Collection will acquire the status of international depositary authority under the said Treaty as from Jan. 31, 1981, the date of publication of the said communication in the Jan. 1981 issue of *Industrial Property/La Propriete industrielle* (see Article 7(2) of the said Treaty).

Dec. 8, 1980.

[1002 O.G. 116]

(84) **Department of Commerce**

PATENT AND TRADEMARK OFFICE

37 CFR Part 1

File Wrapper; Continuing Application Procedure

Agency: Patent and Trademark Office, Commerce.

Action: Proposed rulemaking.

Summary: Patent and Trademark Office proposes amendment of the rules of practice in patent cases to provide an additional procedure for filing continuation and divisional applications. This procedure is being proposed to simplify filing and processing continuation and divisional patent applications by using the application and amendment papers filed in the abandoned parent application. The proposed procedure would eliminate many of the problems currently involved in preparing and processing new patent application papers in such applications.

Dates: Written comments by Feb. 4, 1981. Hearing, Feb. 4, 1981 beginning at 10:00 a.m.

Addressees: Address written comments to the Commissioner of Patents and Trademarks, Washington, D.C. 20231. The hearing will be held in Room 11C24 of Building 3, Crystal Plaza at 2021 Jefferson Davis Highway, Arlington, Va. Written comments and transcript of hearing will be available for public inspection in Room 11E10 of Building 3, Crystal Plaza at 2021 Jefferson Davis Highway, Arlington, Va.

For Further Information Contact: Mr. Louis O. Maassel by telephone at (703) 557-3070, or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information: The Patent and Trademark Office is considering amendments to the rules of practice

in patent cases to permit an applicant for patent to file a continuation or divisional application by simply filing a special request, a new set of claims, and paying the statutory filing fee. The proposed procedure would simplify filing a continuation or divisional application in those cases where the parent application is to be abandoned. If the parent application will issue as a patent, a division or continuation thereof may continue to be filed under the provisions of 37 CFR 1.60. Under the proposal, a new serial number would be assigned to the continuing application, the parent application would be abandoned and, the specification, drawings, oath or declaration, and other papers in the file wrapper of the parent application would be used as the papers in the continuing application, along with the new set of claims. Only the payment of the filing fee, the filing of a special request containing an indication of a desire to continue prosecution and a new set of claims would be required to effect the filing of a continuation or divisional application. The procedure would be available for utility, design, plant, and reissue applications. Use of the proposed procedure will automatically result in abandonment of the parent application.

The proposed procedure could be used for either a continuation or divisional application provided that applicant wishes the parent case to become abandoned.

A continuation or divisional application is an application in which the disclosure is identical to an earlier application. However, the claims may be somewhat changed. Continuation applications are often filed in situations where the applicant feels that the issue of patentability has not been sufficiently developed before the examiner for an appeal from the final rejection to be filed with the Board of Appeals. Divisional applications are filed voluntarily or as a result of a requirement for restriction by the examiner in a prior application.

The filing of continuing applications is provided for in the patent statute at 35 U.S.C. 120. Divisional applications are provided for in 35 U.S.C. 121. Under these provisions of the patent law, a continuation or divisional application may be filed during the pendency of an earlier application and retain the benefit of the filing date of the earlier parent application. Such benefit is valuable to the applicant if prior art becomes available or another inventor made the same invention during the pendency of the first application.

A simplified method of filing of such continuation or divisional applications is presently available under 37 CFR 1.60. Under §1.60, the applicant may pay the filing fee and either supply or ask the Office to prepare the continuation or divisional application papers by making a copy of the original papers. Section 1.60 replaced earlier, more restrictive procedures under 37 CFR 1.147 and a procedure established by Commissioner's notice known as the "Streamline Continuation" program. The procedure under §1.60 would remain in effect in its present form, if the proposed procedure were adopted since it allows a continuation or divisional application to be filed without abandonment of the parent application. The continuation or divisional application practice under §1.60 has resulted in a number of problems. Often the original application does not permit the reproduction of good quality copy. Sometimes applicants prematurely abandon or fail to abandon the original application or otherwise do not understand the §1.60 procedures. Correspondence relating to such problems has become burdensome to both the applicants and the Office. Under current §1.60, the continuation or divisional application, in addition to being copied, must be completely processed as a new application through the Application Division. Microfilming Branch and Licensing and Review Division, as well as the Examining Group's new case docketing and amendment entry procedures. The prior application is sometimes difficult to locate because of the movement and placement of the application file wrapper after it leaves the Examining Group. The proposed procedure would not require such copies to be processed and filed and should therefore result in fewer problems and less work.

The proposed procedure is set forth in proposed §1.62 and is in compliance with the requirements of 35 U.S.C. 111. The specification and drawings from the parent application are made available for use in the continuation or divisional application. A new filing fee is required in accordance with 35 U.S.C. 41(a). The only other statutory filing requirements are claims and a signed oath or declaration. A new copy of claims, beginning with "claim 1." would be required under the proposed procedure. Since a continuation or divisional application filed under proposed §1.62 can not contain new matter, the oath or declaration filed in the parent case should supply all the information required under the statute and rules to obtain a filing date. Accordingly, the previously filed oath or declaration would be considered to be the oath or declaration of the §1.62 continuation or division. If the claims submitted are broadened, a supplemental oath or declaration should be filed by the applicant in accordance with 37 CFR 1.67.

The original disclosure of an application filed under §1.62 would be the original parent application as executed by the inventor(s). However, the filing fee would be based on the new copy of claims which must accompany the request and filing fee. The Certificate of Mailing Procedure under 37 CFR 1.8 would not apply to filing such a request since the filing of such a request is considered to be the filing of an application which is excluded under 37 CFR 1.8(a)(i).

Some of the anticipated benefits of the proposed procedures are the following: 1. Formality problems should be very small.

2. All current rules relating to after final rejection practice and filing of continuing applications would remain unchanged. The proposed filing procedure is an additional alternative which would be available to applicants to use at their option.
3. A more prompt first action in the continuation or divisional application should be received in view of the reduced processing time. The Application Division will process promptly all such applications. In the examining groups, such applications will be given high priority for processing purposes.
4. Amendments made to the specification and drawings of the parent application would carry over into the continuing application and would not need to be submitted again in the continuing application.

For the public: 1. The pendency of applications should be reduced since the time delay before examination and issuance of a continuing application filed under the proposed program would be reduced.

2. The entire record of prosecution would be in one file wrapper, even if several continuation applications were filed. This would result in easier access to a series of applications by the public if a patent is later issued.

For the Patent and Trademark Office: 1. The workload of reviewing and processing new application papers in the Application Division would be reduced.

2. The examining group clerks would not be required to again enter amendments made in the parent application.
3. Less storage space would be required since there would be fewer papers.
4. The parent file history and references cited therein would be readily available to the examiner and need not be ordered from abandoned files.
5. The Office would not be required to prepare a copy of the parent application file as under the current procedures under 37 CFR 1.60.

Proposed new §1.62 outlines the requirements of the proposed procedure.

Section 1.138 is proposed to be amended so that a registered attorney or agent could, without being of record, file a §1.60 or 1.62 application and expressly abandon the prior application. Such an action would not affect an applicant's rights since the prior application would only be expressly abandoned if a filing date is granted to a continuing application.

Notice is hereby given that, pursuant to the authority

contained in section 6 of Title 35 of the United States Code, as amended, the Patent and Trademark Office proposes to amend Title 37 of the Code of Federal Regulations by amending §1.138 and by adding a new §1.62. The Patent and Trademark Office has determined that these rule changes would have no potential major economic consequences requiring the preparation of a regulatory analysis under Executive Order 12044. In the text of rule 1.138 below, additions are shown by arrows and deletions are shown by brackets. It is proposed to amend Title 37 of the Code of Federal Regulations, Chapter I, Part 1, as follows: 1. By adding new §1.62 to read as follows:

§1.62. *File wrapper continuation or division procedure.*

(a) A continuation or divisional application which discloses and claims only subject matter disclosed in a prior application may be filed before the payment of the issue fee, abandonment of, or termination of proceedings on the prior application by filing a request to use the specification, drawings, and oath of declaration from the prior application if the following four conditions are met: (1) The prior application is to be abandoned and not issued as a patent.

(2) A new set of claims to be prosecuted in the continuing application is submitted which begins with a new claim numbered "1."

(3) The filing fee under 35 U.S.C. 41(a) for the continuation or divisional application is paid during the pendency of the prior application. Such filing fee should be based on the number of claims submitted under the previous paragraph.

(4) Information is supplied as to the title, applicant, correspondence address, prior U.S. application, foreign priority application, number of pages of specification and sheets of drawings in the prior application.

(b) The filing of an application under §1.62 will be construed to include a waiver of secrecy by the applicant under 35 U.S.C. 122 to the extent that any member of the public who is entitled under the provisions of 37 CFR 1.14 to access to, or information concerning, either the prior application, or any one of its continuation or divisional applications filed under the provisions of this section may be given similar access to, or information concerning, the other applications in the file wrapper.

(c) The filing of an application under §1.62 will be considered to be a request to expressly abandon the parent application as of the filing date granted the continuation or divisional application filed under §1.62.

2. By revising §1.138 to read as follows:

§1.138 *Express abandonment.*

An application may be expressly abandoned by filing in the Patent and Trademark Office a written declaration of abandonment signed by the applicant himself and the assignee of record, if any, and identifying the application. Except as provided in §1.262 an application may also be expressly abandoned by filing a written declaration of abandonment signed by the attorney or agent of record. A registered attorney or agent or agent acting under the provisions of §1.34(a), or of record, may also expressly abandon a parent application as of the filing date granted to a continuing application by filing such a continuing application under the provisions of §1.60 or §1.62. Express abandonment of the application may not be recognized by the Office unless it is actually received by appropriate officials in time to act thereon before the date of issue.

SIDNEY A. DIAMOND,
Oct. 17, 1980 *Commissioner of Patents and Trademarks.*

JORDAN J. BARUCH,
Oct. 31, 1980. *Assistant Secretary for Productivity, Technology and Innovation.*

[Pending—No Final Action Taken][1001 O.G. 9]

DEPARTMENT OF COMMERCE

(85) **Patent and Trademark Office**

37 CFR Parts 1 and 3

Continuation-in-Part Application Oath of Declaration; Revised Notice of Proposed Rulemaking

Agency: Patent and Trademark Office, Commerce.

Action: Proposed rulemaking.

Summary: Patent and Trademark Office again proposes amendment of the rules of practice and forms for patent cases to specify certain additional requirements of an oath or declaration for continuation-in-part applications. The change is being proposed in view of various court decisions which have interpreted what material is available as references in continuation-in-part applications. The proposed change will clarify what matter must be disclosed by applicants in continuation-in-part applications.

Dates: Written comments by Mar. 31, 1981.

Addresses: Address written comments to the Commissioner of Patents and Trademarks, Washington, D.C. 20231. No additional hearing will be held since a hearing has already been held on Feb. 7, 1979. Written comments and transcript of hearing will be available for public inspection in Room 11E10 of Bldg. 3, Crystal Plaza, at 2021 Jefferson Davis Hwy., Arlington, Va.

For Further Information Contact: Mr. Louis O. Maassel by telephone at (703) 557-3070, or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information: This notice proposes to amend §1.65 by revising paragraph (a) and by adding a new paragraph (d) and to revise forms 3.18 and 3.18*a*. Notice was previously given on Nov. 28, 1978 in the Federal Register (43 FR 55417-55420) of a proposal to amend these sections of Title 37 of the Code of Federal Regulations. However, this proposal was not published in the Official Gazette. As stated in the proposal, the changes are intended to more clearly specify the requirements of an oath or declaration accompanying a continuation-in-part application.

The reasons for the change are set forth in the following discussion.

Any claim in a continuation-in-part application which is directed *solely* to subject matter adequately disclosed under 35 U.S.C. 112 in the parent application is entitled to the benefit of the filing date of the parent application. However, if a claim in a continuation-in-part application recites a feature which was not disclosed or adequately supported by a proper disclosure under 35 U.S.C. 112 in the parent application, but which was first introduced or adequately supported in the continuation-in-part application such a claim is entitled only to the filing date of the continuation-in-part application, *In re von Langenhoven,* 458 F.2d 132, at 136, 173 USPQ 426 at 429 (CCPA 1972) and *Chromalloy American Corp. v. Alloy Surfaces Co., Inc.,* 339 F. Supp. 859 at 874, 173 USPQ 295 at 306 (D. Del. 1972).

An illustration of the effects of these and other cases is as follows: An application is filed which discloses the combination AB. Within the priority year a foreign application to the combination AB is filed by applicant and later published. More than one year after the foreign publication, but still during the pendency of the parent United States application, a second United States application is filed by the same inventor which discloses and claims the combination AC and is therefor designated a continuation-in-part application.

Upon examination of the continuation-in-part application, the examiner concludes that C is in fact a known element in the art and that it would be obvious to substitute C for B in the combination AB.

A claim drawn to AC finds no support in the parent case and therefore carries an effective date only as early

as the filing of the continuation-in-part application. Therefore, the publication of AB in the foreign application more than one year prior to the filing of the continuation-in-part application is prior art under 35 U.S.C. 103 by reason of the provisions of 35 U.S.C. 102(b) and together with a showing that C is old, may provide basis for rejection of a claim to AC for obviousness. Similarly, public use or sale of AB in the United States more than one year prior to the filing of the continuation-in-part application would be prior art under 35 U.S.C. 103 by reason of 35 U.S.C. 102(b). And the grant of a foreign patent or inventor's certificate on AB, based on a foreign application filed more than twelve months prior to and issued before filing the continuation-in-part application would be prior art under 35 U.S.C. 103 by reason of 35 U.S.C. 102(d). It is for these reasons that applicants must supply information concerning the common subject matter relative to the continuation-in-part filing date in those instances where any of the claims recite additional subject matter and are thereby only entitled to the continuation-in-part filing date. This proposed change would not require applicant to supply any kind of information in addition to that required by the current rules. Only the date relative to which the information must be supplied is being changed.

By way of further illustration, if the claims of a continuation-in-part application which are only entitled to the continuation-in-part filing date, "read on" such published, publically used or sold, or patented subject matter (e.g., as in a genus-species relationship) a rejection under 35 U.S.C. 102 would be proper. Cases of interest in this regard are *In re Steenbock,* 83 F.2d 912, 30 USPQ 45 (CCPA 1936); *In re Ruscetta,* 255 F.2d 687, 118 USPQ 101 (CCPA 1958); *In re Hafner,* 410 F.2d 1403, 161 USPQ 783 (CCPA 1969); *In re Lukach,* 442 F.2d 967, 169 USPQ 795 (CCPA 1971); and *Exparte Hageman,* 179 USPQ 747 (Bd. App. 1971).

In addition, knowledge, use or patenting by another before the applicant's invention of additional subject matter claimed in the continuation-in-part application would also constitute prior art although such activity may not necessarily be known to the applicant.

In view of the above, §1.65 is proposed to be amended by the addition of a paragraph (d) which requires the applicant in a continuation-in-part application, which both discloses and claims subject matter in addition to that disclosed in the prior copending application, to make an oath or declaration as of the filing date of the continuation-in-part application. Corresponding changes are being made in the oath and declaration forms in Part 3 of 37 CFR.

It is recognized that all of the information called for in the proposed forms would not be required by §1.65(d) in some cases, such as where there is additional disclosure in the continuation-in-part application but where all claims are directed to the common subject matter disclosed in the parent application. In such an instance §1.65(d) does not require any statements in the oath or declaration as to the common subject matter as of the continuation-in-part filing date, and the applicant may modify the forms, if desired, so that the statements referring to the common subject matter are made with reference to the filing date of the parent application. However, the use of the proposed forms in these cases would act as a safeguard for applicant, since he may later amend his claims to recite some of the additional disclosure. Similarly, the examiner might disagree with applicant's conclusion that additional subject matter is not being claimed in the continuation-in-part application. For this reason and the possibility that confusion might be generated by multiple forms, no specific forms are proposed for use in the case where all of the claims in the continuation-in-part application may be entitled to the filing date of the parent application.

Where activity has occurred in connection with an invention, but is not believed to constitute prior art within the meaning of Section 102 of Title 35, United States Code (such as a prior public use or sale of an experimental nature more than one year before the date of the application), such activity may be referred to in the continuation-in-part oath or declaration with any qualifications about its prior art status deemed warranted, or it need not be mentioned in the oath or declaration at all. If such activity is not mentioned in the continuation-in-part oath or declaration but is material to the examination under 37 CFR 1.56 it, of course, must be called to the Office's attention in a separate paper.

Response to Substantive Public Comments Received.

Written comments have already been received from seven individuals and organizations. Two individuals presented oral comments at the hearing.

The many comments objecting to the best mode requirement acknowledgment are not mentioned here since this acknowledgment requirement has been deleted in this proposal. For the being, no further action is being taken on this item.

Proposed paragraph (a) of 37 CFR 1.65 is being revised to provide for both masculine and feminine gender.

A number of comments were directed to the argument that the examiners would misapply the provided information. The response to this line of argument is that the proper application of references is something that must be decided currently by patent examiners in the normal course of patent examination. It is not seen that the adoption of this rule change would result in any new problems.

The proposed forms are examples of forms which would meet the requirements of proposed §1.65(d). The forms could be modified by application to handle specific situations such as where no additional subject matter is being claimed.

This proposal is being republished to clarify the intent and scope of the proposed changes and to provide additional opportunity for comments to be received from the public.

Differences Between the Earlier Proposal and This Proposal.

Proposed paragraph (a) of §1.65 differs from the earlier proposal in that the sentence acknowledging the requirement to disclose the best mode of the invention is not included. The best mode provision has also been deleted from the proposed forms of §§3.18 and 3.18a. *Classification.* Under the regulations of the Department of Commerce, this rulemaking proposal is deemed to be significant. *Regulatory Analysis.* The Patent and Trademark Office has determined that the proposed amendment of 37 CFR Parts 1 and 3 would not have major economic impact and therefor does not require a regulatory analysis.

For the foregoing reasons, and under the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, §§1.65, 3.18, and 3.18(a) of Title 37 CFR are proposed to be amended as follows.

In the texts of the following proposed amendments to §1.65, additions are indicated by arrows and deletions are indicated by brackets. The changes to §3.18 and §3.18(a) are not noted in this manner because of numerous changes in wording.

PART 1—RULES OF PRACTICE IN PATENT CASES

1. Section 1.65 is proposed to be amended by revising paragraph (a) and by adding a new paragraph (d) to read as follows:

§1.65 Oath or Declaration.

(a)(1) The applicant, if the inventor, must state that [he] the applicant verily believes himself or herself to be the original and first inventor or discoverer of the process, machine, manufacture, composition of matter, or improvement thereof, for which [he solicits] a patent is solicited that the applicant [he] does not know and does not believe that the same was ever known or used in the United States before the applicant's [his] invention or discovery thereof, and shall state of what country the applicant [he] is a citizen and where the applicant

[he] resides and whether the applicant [he] is a sole or joint inventor of the invention claimed in the application. In every original application the applicant must distinctly state that to the best of the applicant's [his] knowledge and belief the invention has not been in public use or on sale in the United States more than one year prior to the [his] application or patented or described in any printed publication in any country before the applicant's [his] invention or more than one year prior to the [his] application, or patented or made the subject of an inventor's certificate in any foreign country prior to the date of the [his] application on an application filed by the applicant [himself] or the applicant's [his] legal representatives or assigns more than twelve months prior to the [his] application in this country. The applicant [he] must acknowledge the [a] duty to disclose information the applicant [he] is aware of which is material to the examination of the application. The applicant [He] shall state whether or not any application for patent or inventor's certificate on the same invention has been filed in any foreign country, either by the applicant [himself] or the applicant's [his] legal representatives or assigns. If any such application has been filed, the applicant shall name the country in which the earliest such application was filed, and shall give the day, month, and year of its filing; the applicant [he] shall also identify by country and by day, month, and year of filing, every such foreign application filed more than twelve months before the filing of the application in this country.

(2) This statement (i) must be subscribed to by the applicant, and (ii) must either (a) be sworn to (or affirmed) as provided in §1.66 or (b) include the personal declaration of the applicant as prescribed in §1.68. See §1.153 for design cases and §1.162 for plant cases.

* * * * *

(d) An applicant in a continuation-in-part application filed under the conditions specified in 35 U.S.C. 120 which discloses and claims subject matter in addition to that disclosed in the prior copending application, must identify the prior copending application and make an oath or declaration which includes the statements required by paragraph (a) of this section, or a list of the exceptions to the statements, (1) as to the common subject matter and (2) as to the non-common subject matter. The statements must be made in reference to the filing date of the continuation-in-part application in both cases (1) and (2).

PART 3—FORMS FOR PATENT CASES

2. Section 3.18 is proposed to be revised to read as follows:

§3.18 Oath in copending application containing additional subject matter.

[This form of oath may be used with an application disclosing additional subject matter to that disclosed in a prior copending application of the same inventor.]

As a below named inventor, I hereby state that:

My residence, post office address and citizenship are as stated below next to my name;

I verily believe that I am the original, first and sole inventor (if only one name is listed below) or a joint inventor (if plural inventors are named below) of the invention entitled: _____ described and claimed in the attached specification.

That I acknowledge my duty to disclose information of which I am aware which is material to the examination of this application.

This application discloses subject matter in addition to that disclosed in my or our earlier filed pending application(s), Serial No. _____, filed _____;

As to the claimed subject matter of this application which is common to said earlier application, I do not know and do not believe that the same was ever known or used in the United States of America before my or our invention thereof, or patented or described in any printed publication in any country before my or our invention thereof or more than one year prior to this application except as follows: _____

That the same was not in public use or on sale in the United States of America more than one year prior to this application, except as follows: _____, that said common subject matter has not been patented or made the subject of an inventor's certificate issued before the date of this application in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns more than twelve months prior to this application, except as follows: _____, that as to applications for patent or inventor's certificate on the common subject matter filed by me or my legal representatives or assigns in any country foreign to the United States or America prior to this application.

no such applications have been filed,
such applications have been filed, the filing date and country in which the earliest such application was filed are _____,

and that the filing date and country of filing of every other such foreign application filed more than twelve months prior to the filing of this application are as follows: _____

As to the additional claimed subject matter of this application which is not common to said earlier application, I do not know and do not believe that the same was ever known or used in the United States of America before my or our invention thereof, or patented or described in a printed publication in any country before my or our invention thereof or more than one year prior to this application, or in public use or on sale in the United States of America more than one year prior to the date of this application, and that said subject matter has not been patented or made the subject of an inventor's certificate in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns more than twelve months prior to the date of this application; that as to applications for patent or inventor's certificate on said non-common subject matter filed by me or my legal representatives or assigns in any country foreign to the United States of America prior to this application.

no such applications have been filed,
such applications have been filed, the filing date and country in which the earliest such application was filed are _____,

and that the filing date and country of filing of every other such foreign application filed more than twelve months prior to the filing of this application are as follows: _____

I hereby appoint the following attorney(s) and/or agents to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith: _____

Telephone No. _____

Address all correspondence to _____

Inventor's full name _____

Inventor's signature _____

Date _____

Residence _____

Citizenship _____

Post Office Address _____

Inventor's full name _____

Inventor's signature _____

Date _____

Citizenship _____

Post Office Address _____

SS:

Sworn to and subscribed before me this _____day of

Public Law 96-517
96th Congress

An Act

To amend the patent and trademark laws.

Dec. 12, 1980
[H.R. 6933]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That title 35 of the United States Code, entitled "Patents", is amended by adding after chapter 29 the following new chapter 30:

Patent and trademark laws, amendment.

"CHAPTER 30—PRIOR ART CITATIONS TO OFFICE AND REEXAMINATION OF PATENTS

"Sec.
"301. Citation of prior art.
"302. Request for reexamination.
"303. Determination of issue by Commissioner.
"304. Reexamination order by Commissioner.
"305. Conduct of reexamination proceedings.
"306. Appeal.
"307. Certificate of patentability, unpatentability, and claim cancellation.

"§ 301. Citation of prior art

35 USC 301.

"Any person at any time may cite to the Office in writing prior art consisting of patents or printed publications which that person believes to have a bearing on the patentability of any claim of a particular patent. If the person explains in writing the pertinency and manner of applying such prior art to at least one claim of the patent, the citation of such prior art and the explanation thereof will become a part of the official file of the patent. At the written request of the person citing the prior art, his or her identity will be excluded from the patent file and kept confidential.

"§ 302. Request for reexamination

35 USC 302.

"Any person at any time may file a request for reexamination by the Office of any claim of a patent on the basis of any prior art cited under the provisions of section 301 of this title. The request must be in writing and must be accompanied by payment of a reexamination fee established by the Commissioner of Patents pursuant to the provisions of section 41 of this title. The request must set forth the pertinency and manner of applying cited prior art to every claim for which reexamination is requested. Unless the requesting person is the owner of the patent, the Commissioner promptly will send a copy of the request to the owner of record of the patent.

Fee.

Post, p. 3017.

"§ 303. Determination of issue by Commissioner

35 USC 303.

"(a) Within three months following the filing of a request for reexamination under the provisions of section 302 of this title, the Commissioner will determine whether a substantial new question of patentability affecting any claim of the patent concerned is raised by the request, with or without consideration of other patents or printed publications. On his own initiative, and any time, the Commissioner may determine whether a substantial new question of patentability is

raised by patents and publications discovered by him or cited under the provisions of section 301 of this title.

Record. "(b) A record of the Commissioner's determination under subsection (a) of this section will be placed in the official file of the patent, and a copy promptly will be given or mailed to the owner of record of the patent and to the person requesting reexamination, if any.

"(c) A determination by the Commissioner pursuant to subsection (a) of this section that no substantial new question of patentability

Refund. has been raised will be final and nonappealable. Upon such a determination, the Commissioner may refund a portion of the reexamination fee required under section 302 of this title.

35 USC 304. **"§ 304. Reexamination order by Commissioner**

"If, in a determination made under the provisions of subsection 303(a) of this title, the Commissioner finds that a substantial new question of patentability affecting any claim of a patent is raised, the determination will include an order for reexamination of the patent

Filing period. for resolution of the question. The patent owner will be given a reasonable period, not less than two months from the date a copy of the determination is given or mailed to him, within which he may file a statement on such question, including any amendment to his patent and new claim or claims he may wish to propose, for consideration in the reexamination. If the patent owner files such a statement, he promptly will serve a copy of it on the person who has requested reexamination under the provisions of section 302 of this title. Within a period of two months from the date of service, that person may file and have considered in the reexamination a reply to any statement filed by the patent owner. That person promptly will serve on the patent owner a copy of any reply filed.

35 USC 305. **"§ 305. Conduct of reexamination proceedings**

"After the times for filing the statement and reply provided for by section 304 of this title have expired, reexamination will be conducted according to the procedures established for initial examination under

35 USC 132, 133. the provisions of sections 132 and 133 of this title. In any reexamination proceeding under this chapter, the patent owner will be permitted to propose any amendment to his patent and a new claim or claims thereto, in order to distinguish the invention as claimed from the prior art cited under the provisions of section 301 of this title, or in response to a decision adverse to the patentability of a claim of a patent. No proposed amended or new claim enlarging the scope of a claim of the patent will be permitted in a reexamination proceeding under this chapter. All reexamination proceedings under this section, including any appeal to the Board of Appeals, will be conducted with special dispatch within the Office.

35 USC 306. **"§ 306. Appeal**

"The patent owner involved in a reexamination proceeding under this chapter may appeal under the provisions of section 134 of this

35 USC 134. title, and may seek court review under the provisions of sections 141

35 USC 141-145. to 145 of this title, with respect to any decision adverse to the patentability of any original or proposed amended or new claim of the patent.

35 USC 307. **"§ 307. Certificate of patentability, unpatentability, and claim cancellation**

"(a) In a reexamination proceeding under this chapter, when the time for appeal has expired or any appeal proceeding has terminated,

the Commissioner will issue and publish a certificate canceling any claim of the patent finally determined to be unpatentable, confirming any claim of the patent determined to be patentable, and incorporating in the patent any proposed amended or new claim determined to be patentable.

"(b) Any proposed amended or new claim determined to be patentable and incorporated into a patent following a reexamination proceeding will have the same effect as that specified in section 252 of this title for reissued patents on the right of any person who made, purchased, or used anything patented by such proposed amended or new claim, or who made substantial preparation for the same, prior to issuance of a certificate under the provisions of subsection (a) of this section.". 35 USC 252.

SEC. 2. Section 41 of title 35, United States Code, is amended to read as follows:

"§ 41. Patent fees 35 USC 41.

"(a) The Commissioner of Patents will establish fees for the processing of an application for a patent, from filing through disposition by issuance or abandonment, for maintaining a patent in force, and for providing all other services and materials related to patents. No fee will be established for maintaining a design patent in force.

"(b) By the first day of the first fiscal year beginning on or after one calendar year after enactment of this Act, fees for the actual processing of an application for a patent, other than for a design patent, from filing through disposition by issuance or abandonment, will recover in aggregate 25 per centum of the estimated average cost to the Office of such processing. By the first day of the first fiscal year beginning on or after one calendar year after enactment, fees for the processing of an application for a design patent, from filing through disposition by issuance or abandonment, will recover in aggregate 50 per centum of the estimated average cost to the Office of such processing.

"(c) By the fifteenth fiscal year following the date of enactment of this Act, fees for maintaining patents in force will recover 25 per centum of the estimated cost to the Office, for the year in which such maintenance fees are received, of the actual processing all applications for patents, other than for design patents, from filing through disposition by issuance or abandonment. Fees for maintaining a patent in force will be due three years and six months, seven years and six months, and eleven years and six months after the grant of the patent. Unless payment of the applicable maintenance fee is received in the Patent and Trademark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as of the end of such grace period. The Commissioner may require the payment of a surcharge as a condition of accepting within such six-month grace period the late payment of an applicable maintenance fee.

"(d) By the first day of the first fiscal year beginning on or after one calendar year after enactment, fees for all other services or materials related to patents will recover the estimated average cost to the Office of performing the service or furnishing the material. The yearly fee for providing a library specified in section 13 of this title with uncertified printed copies of the specifications and drawings for all patents issued in that year will be $50. 35 USC 13.

"(e) The Commissioner may waive the payment of any fee for any service or material related to patents in connection with an occasional or incidental request made by a department or agency of the Waiver.

Government, or any officer thereof. The Commissioner may provide any applicant issued a notice under section 132 of this title with a copy of the specifications and drawings for all patents referred to in that notice without charge.

35 USC 132.

"(f) Fees will be adjusted by the Commissioner to achieve the levels of recovery specified in this section; however, no patent application processing fee or fee for maintaining a patent in force will be adjusted more than once every three years.

Notice.

"(g) No fee established by the Commissioner under this section will take effect prior to sixty days following notice in the Federal Register.".

SEC. 3. Section 42 of title 35, United States Code, is amended to read as follows:

35 USC 42.

"§ 42. Patent and Trademark Office funding

"(a) All fees for services performed by or materials furnished by the Patent and Trademark Office will be payable to the Commissioner.

"(b) All fees paid to the Commissioner and all appropriations for defraying the costs of the activities of the Patent and Trademark Office will be credited to the Patent and Trademark Office Appropriation Account in the Treasury of the United States, the provisions of section 725e of title 31, United States Code, notwithstanding.

"(c) Revenues from fees will be available to the Commissioner of Patents to carry out, to the extent provided for in appropriation Acts, the activities of the Patent and Trademark Office.

Refund.

"(d) The Commissioner may refund any fee paid by mistake or any amount paid in excess of that required.".

SEC. 4. Section 154 of title 35, United States Code, is amended by deleting the word "issue".

SEC. 5. Section 31 of the Trademark Act of 1946, as amended (15 U.S.C. 1113), is amended to read as follows:

"§ 31. Fees

"(a) The Commissioner of Patents will establish fees for the filing and processing of an application for the registration of a trademark or other mark and for all other services performed by and materials furnished by the Patent and Trademark Office related to trademarks and other marks. Fees will be set and adjusted by the Commissioner to recover in aggregate 50 per centum of the estimated average cost to the Office of such processing. Fees for all other services or materials related to trademarks and other marks will recover the estimated average cost to the Office of performing the service or furnishing the material. However, no fee for the filing or processing of an application for the registration of a trademark or other mark or for the renewal or assignment of a trademark or other mark will be adjusted more than once every three years. No fee established under this section will take effect prior to sixty days following notice in the Federal Register.

Notice.

Waiver.

"(b) The Commissioner may waive the payment of any fee for any service or material related to trademarks or other marks in connection with an occasional request made by a department or agency of the Government, or any officer thereof. The Indian Arts and Crafts Board will not be charged any fee to register Government trademarks of genuineness and quality for Indian products or for products of particular Indian tribes and groups.".

Indian products, exception.

SEC. 6. (a) Title 35 of the United States Code, entitled "Patents", is amended by adding after chapter 37 the following new chapter 38:

"CHAPTER 38—PATENT RIGHTS IN INVENTIONS MADE WITH FEDERAL ASSISTANCE

"Sec.
"200. Policy and objective.
"201. Definitions.
"202. Disposition of rights.
"203. March-in rights.
"204. Preference for United States industry.
"205. Confidentiality.
"206. Uniform clauses and regulations.
"207. Domestic and foreign protection of federally owned inventions.
"208. Regulations governing Federal licensing.
"209. Restrictions on licensing of federally owned inventions.
"210. Precedence of chapter.
"211. Relationship to antitrust laws.

"§ 200. Policy and objective

35 USC 200.

"It is the policy and objective of the Congress to use the patent system to promote the utilization of inventions arising from federally supported research or development; to encourage maximum participation of small business firms in federally supported research and development efforts; to promote collaboration between commercial concerns and nonprofit organizations, including universities; to ensure that inventions made by nonprofit organizations and small business firms are used in a manner to promote free competition and enterprise; to promote the commercialization and public availability of inventions made in the United States by United States industry and labor; to ensure that the Government obtains sufficient rights in federally supported inventions to meet the needs of the Government and protect the public against nonuse or unreasonable use of inventions; and to minimize the costs of administering policies in this area.

"§ 201. Definitions

35 USC 201.

"As used in this chapter—

"(a) The term 'Federal agency' means any executive agency as defined in section 105 of title 5, United States Code, and the military departments as defined by section 102 of title 5, United States Code.

"(b) The term 'funding agreement' means any contract, grant, or cooperative agreement entered into between any Federal agency, other than the Tennessee Valley Authority, and any contractor for the performance of experimental, developmental, or research work funded in whole or in part by the Federal Government. Such term includes any assignment, substitution of parties, or subcontract of any type entered into for the performance of experimental, developmental, or research work under a funding agreement as herein defined.

"(c) The term 'contractor' means any person, small business firm, or nonprofit organization that is a party to a funding agreement.

"(d) The term 'invention' means any invention or discovery which is or may be patentable or otherwise protectable under this title.

"(e) The term 'subject invention' means any invention of the contractor conceived or first actually reduced to practice in the performance of work under a funding agreement.

"(f) The term 'practical application' means to manufacture in the case of a composition or product, to practice in the case of a process or method, or to operate in the case of a machine or system; and, in each case, under such conditions as to establish

that the invention is being utilized and that its benefits are to the extent permitted by law or Government regulations available to the public on reasonable terms.

"(g) The term 'made' when used in relation to any invention means the conception or first actual reduction to practice of such invention.

"(h) The term 'small business firm' means a small business concern as defined at section 2 of Public Law 85–536 (15 U.S.C. 632) and implementing regulations of the Administrator of the Small Business Administration.

"(i) The term 'nonprofit organization' means universities and other institutions of higher education or an organization of the type described in section 501(c)(3) of the Internal Revenue Code of 1954 (26 U.S.C. 501(c)) and exempt from taxation under section 501(a) of the Internal Revenue Code (26 U.S.C. 501(a)) or any nonprofit scientific or educational organization qualified under a State nonprofit organization statute.

35 USC 202.

"§ 202. Disposition of rights

"(a) Each nonprofit organization or small business firm may, within a reasonable time after disclosure as required by paragraph (c)(1) of this section, elect to retain title to any subject invention: *Provided, however,* That a funding agreement may provide otherwise (i) when the funding agreement is for the operation of a Government-owned research or production facility, (ii) in exceptional circumstances when it is determined by the agency that restriction or elimination of the right to retain title to any subject invention will better promote the policy and objectives of this chapter or (iii) when it is determined by a Government authority which is authorized by statute or Executive order to conduct foreign intelligence or counter-intelligence activities that the restriction or elimination of the right to retain title to any subject invention is necessary to protect the security of such activities. The rights of the nonprofit organization or small business firm shall be subject to the provisions of paragraph (c) of this section and the other provisions of this chapter.

Funding agreement.

"(b)(1) Any determination under (ii) of paragraph (a) of this section shall be in writing and accompanied by a written statement of facts justifying the determination. A copy of each such determination and justification shall be sent to the Comptroller General of the United States within thirty days after the award of the applicable funding agreement. In the case of determinations applicable to funding agreements with small business firms copies shall also be sent to the Chief Counsel for Advocacy of the Small Business Administration.

Written determination.

Copy to Comptroller General.

Copy to SBA.

"(2) If the Comptroller General believes that any pattern of determinations by a Federal agency is contrary to the policy and objectives of this chapter or that an agency's policies or practices are otherwise not in conformance with this chapter, the Comptroller General shall so advise the head of the agency. The head of the agency shall advise the Comptroller General in writing within one hundred and twenty days of what action, if any, the agency has taken or plans to take with respect to the matters raised by the Comptroller General.

Contrary agency determinations.

"(3) At least once each year, the Comptroller General shall transmit a report to the Committees on the Judiciary of the Senate and House of Representatives on the manner in which this chapter is being implemented by the agencies and on such other aspects of Government patent policies and practices with respect to federally funded inventions as the Comptroller General believes appropriate.

Report to congressional committees.

"(c) Each funding agreement with a small business firm or nonprofit organization shall contain appropriate provisions to effectuate the following: Funding agreement requirements.

"(1) A requirement that the contractor disclose each subject invention to the Federal agency within a reasonable time after it is made and that the Federal Government may receive title to any subject invention not reported to it within such time.

"(2) A requirement that the contractor make an election to retain title to any subject invention within a reasonable time after disclosure and that the Federal Government may receive title to any subject invention in which the contractor does not elect to retain rights or fails to elect rights within such time.

"(3) A requirement that a contractor electing rights file patent applications within reasonable times and that the Federal Government may receive title to any subject inventions in the United States or other countries in which the contractor has not filed patent applications on the subject invention within such times.

"(4) With respect to any invention in which the contractor elects rights, the Federal agency shall have a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States any subject invention throughout the world, and may, if provided in the funding agreement, have additional rights to sublicense any foreign government or international organization pursuant to any existing or future treaty or agreement.

"(5) The right of the Federal agency to require periodic reporting on the utilization or efforts at obtaining utilization that are being made by the contractor or his licensees or assignees: *Provided,* That any such information may be treated by the Federal agency as commercial and financial information obtained from a person and privileged and confidential and not subject to disclosure under section 552 of title 5 of the United States Code.

"(6) An obligation on the part of the contractor, in the event a United States patent application is filed by or on its behalf or by any assignee of the contractor, to include within the specification of such application and any patent issuing thereon, a statement specifying that the invention was made with Government support and that the Government has certain rights in the invention.

"(7) In the case of a nonprofit organization, (A) a prohibition upon the assignment of rights to a subject invention in the United States without the approval of the Federal agency, except where such assignment is made to an organization which has as one of its primary functions the management of inventions and which is not, itself, engaged in or does not hold a substantial interest in other organizations engaged in the manufacture or sale of products or the use of processes that might utilize the invention or be in competition with embodiments of the invention (provided that such assignee shall be subject to the same provisions as the contractor); (B) a prohibition against the granting of exclusive licenses under United States Patents or Patent Applications in a subject invention by the contractor to persons other than small business firms for a period in excess of the earlier of five years from first commercial sale or use of the invention or eight years from the date of the exclusive license excepting that time before regulatory agencies necessary to

obtain premarket clearance unless, on a case-by-case basis, the Federal agency approves a longer exclusive license. If exclusive field of use licenses are granted, commercial sale or use in one field of use shall not be deemed commercial sale or use as to other fields of use, and a first commercial sale or use with respect to a product of the invention shall not be deemed to end the exclusive period to different subsequent products covered by the invention; (C) a requirement that the contractor share royalties with the inventor; and (D) a requirement that the balance of any royalties or income earned by the contractor with respect to subject inventions, after payment of expenses (including payments to inventors) incidental to the administration of subject inventions, be utilized for the support of scientific research or education.

"(8) The requirements of sections 203 and 204 of this chapter.

Rights, retention.

"(d) If a contractor does not elect to retain title to a subject invention in cases subject to this section, the Federal agency may consider and after consultation with the contractor grant requests for retention of rights by the inventor subject to the provisions of this Act and regulations promulgated hereunder.

Rights, transfer or assignment.

"(e) In any case when a Federal employee is a coinventor of any invention made under a funding agreement with a nonprofit organization or small business firm, the Federal agency employing such coinventor is authorized to transfer or assign whatever rights it may acquire in the subject invention from its employee to the contractor subject to the conditions set forth in this chapter.

Third-party licensing, prohibition.

"(f)(1) No funding agreement with a small business firm or nonprofit organization shall contain a provision allowing a Federal agency to require the licensing to third parties of inventions owned by the contractor that are not subject inventions unless such provision has been approved by the head of the agency and a written justification has been signed by the head of the agency. Any such provision shall clearly state whether the licensing may be required in connection with the practice of a subject invention, a specifically identified work object, or both. The head of the agency may not delegate the authority to approve provisions or sign justifications required by this paragraph.

"(2) A Federal agency shall not require the licensing of third parties under any such provision unless the head of the agency determines that the use of the invention by others is necessary for the practice of a subject invention or for the use of a work object of the funding agreement and that such action is necessary to achieve the practical application of the subject invention or work object. Any such determination shall be on the record after an opportunity for an agency hearing. Any action commenced for judicial review of such determination shall be brought within sixty days after notification of such determination.

35 USC 203.

"§ 203. March-in rights

"With respect to any subject invention in which a small business firm or nonprofit organization has acquired title under this chapter, the Federal agency under whose funding agreement the subject invention was made shall have the right, in accordance with such procedures as are provided in regulations promulgated hereunder to require the contractor, an assignee or exclusive licensee of a subject invention to grant a nonexclusive, partially exclusive, or exclusive license in any field of use to a responsible applicant or applicants, upon terms that are reasonable under the circumstances, and if the contractor, assignee, or exclusive licensee refuses such request, to

grant such a license itself, if the Federal agency determines that such—

"(a) action is necessary because the contractor or assignee has not taken, or is not expected to take within a reasonable time, effective steps to achieve practical application of the subject invention in such field of use;

"(b) action is necessary to alleviate health or safety needs which are not reasonably satisfied by the contractor, assignee, or their licensees;

"(c) action is necessary to meet requirements for public use specified by Federal regulations and such requirements are not reasonably satisfied by the contractor, assignee, or licensees; or

"(d) action is necessary because the agreement required by section 204 has not been obtained or waived or because a licensee of the exclusive right to use or sell any subject invention in the United States is in breach of its agreement obtained pursuant to section 204.

"§ 204. Preference for United States industry 35 USC 204.

"Notwithstanding any other provision of this chapter, no small business firm or nonprofit organization which receives title to any subject invention and no assignee of any such small business firm or nonprofit organization shall grant to any person the exclusive right to use or sell any subject invention in the United States unless such person agrees that any products embodying the subject invention or produced through the use of the subject invention will be manufactured substantially in the United States. However, in individual cases, the requirement for such an agreement may be waived by the Federal agency under whose funding agreement the invention was made upon a showing by the small business firm, nonprofit organization, or assignee that reasonable but unsuccessful efforts have been made to grant licenses on similar terms to potential licensees that would be likely to manufacture substantially in the United States or that under the circumstances domestic manufacture is not commercially feasible. Waiver.

"§ 205. Confidentiality 35 USC 205.

"Federal agencies are authorized to withhold from disclosure to the public information disclosing any invention in which the Federal Government owns or may own a right, title, or interest (including a nonexclusive license) for a reasonable time in order for a patent application to be filed. Furthermore, Federal agencies shall not be required to release copies of any document which is part of an application for patent filed with the United States Patent and Trademark Office or with any foreign patent office.

"§ 206. Uniform clauses and regulations 35 USC 206.

"The Office of Federal Procurement Policy, after receiving recommendations of the Office of Science and Technology Policy, may issue regulations which may be made applicable to Federal agencies implementing the provisions of sections 202 through 204 of this chapter and the Office of Federal Procurement Policy shall establish standard funding agreement provisions required under this chapter.

"§ 207. Domestic and foreign protection of federally owned inventions 35 USC 207.

"Each Federal agency is authorized to—

"(1) apply for, obtain, and maintain patents or other forms of protection in the United States and in foreign countries on inventions in which the Federal Government owns a right, title, or interest;

"(2) grant nonexclusive, exclusive, or partially exclusive licenses under federally owned patent applications, patents, or other forms of protection obtained, royalty-free or for royalties or other consideration, and on such terms and conditions, including the grant to the licensee of the right of enforcement pursuant to the provisions of chapter 29 of this title as determined appropriate in the public interest;

35 USC 281 *et seq.*

"(3) undertake all other suitable and necessary steps to protect and administer rights to federally owned inventions on behalf of the Federal Government either directly or through contract; and

"(4) transfer custody and administration, in whole or in part, to another Federal agency, of the right, title, or interest in any federally owned invention.

35 USC 208.

"§ 208. Regulations governing Federal licensing

"The Administrator of General Services is authorized to promulgate regulations specifying the terms and conditions upon which any federally owned invention, other than inventions owned by the Tennessee Valley Authority, may be licensed on a nonexclusive, partially exclusive, or exclusive basis.

35 USC 209.

"§ 209. Restrictions on licensing of federally owned inventions

Development or marketing plan.

"(a) No Federal agency shall grant any license under a patent or patent application on a federally owned invention unless the person requesting the license has supplied the agency with a plan for development and/or marketing of the invention, except that any such plan may be treated by the Federal agency as commercial and financial information obtained from a person and privileged and confidential and not subject to disclosure under section 552 of title 5 of the United States Code.

Manufacture in U.S.

"(b) A Federal agency shall normally grant the right to use or sell any federally owned invention in the United States only to a licensee that agrees that any products embodying the invention or produced through the use of the invention will be manufactured substantially in the United States.

"(c)(1) Each Federal agency may grant exclusive or partially exclusive licenses in any invention covered by a federally owned domestic patent or patent application only if, after public notice and opportunity for filing written objections, it is determined that—

"(A) the interests of the Federal Government and the public will best be served by the proposed license, in view of the applicant's intentions, plans, and ability to bring the invention to practical application or otherwise promote the invention's utilization by the public;

"(B) the desired practical application has not been achieved, or is not likely expeditiously to be achieved, under any nonexclusive license which has been granted, or which may be granted, on the invention;

"(C) exclusive or partially exclusive licensing is a reasonable and necessary incentive to call forth the investment of risk capital and expenditures to bring the invention to practical application or otherwise promote the invention's utilization by the public; and

"(D) the proposed terms and scope of exclusivity are not greater than reasonably necessary to provide the incentive for bringing the invention to practical application or otherwise promote the invention's utilization by the public.

Antitrust factors.

"(2) A Federal agency shall not grant such exclusive or partially exclusive license under paragraph (1) of this subsection if it determines that the grant of such license will tend substantially to lessen competition or result in undue concentration in any section of the country in any line of commerce to which the technology to be licensed relates, or to create or maintain other situations inconsistent with the antitrust laws.

Small business preference.

"(3) First preference in the exclusive or partially exclusive licensing of federally owned inventions shall go to small business firms submitting plans that are determined by the agency to be within the capabilities of the firms and equally likely, if executed, to bring the invention to practical application as any plans submitted by applicants that are not small business firms.

Antitrust factors.

"(d) After consideration of whether the interests of the Federal Government or United States industry in foreign commerce will be enhanced, any Federal agency may grant exclusive or partially exclusive licenses in any invention covered by a foreign patent application or patent, after public notice and opportunity for filing written objections, except that a Federal agency shall not grant such exclusive or partially exclusive license if it determines that the grant of such license will tend substantially to lessen competition or result in undue concentration in any section of the United States in any line of commerce to which the technology to be licensed relates, or to create or maintain other situations inconsistent with antitrust laws.

Record.

"(e) The Federal agency shall maintain a record of determinations to grant exclusive or partially exclusive licenses.

Terms and conditions.

"(f) Any grant of a license shall contain such terms and conditions as the Federal agency determines appropriate for the protection of the interests of the Federal Government and the public, including provisions for the following:

"(1) periodic reporting on the utilization or efforts at obtaining utilization that are being made by the licensee with particular reference to the plan submitted: *Provided,* That any such information may be treated by the Federal agency as commercial and financial information obtained from a person and privileged and confidential and not subject to disclosure under section 552 of title 5 of the United States Code;

"(2) the right of the Federal agency to terminate such license in whole or in part if it determines that the licensee is not executing the plan submitted with its request for a license and the licensee cannot otherwise demonstrate to the satisfaction of the Federal agency that it has taken or can be expected to take within a reasonable time, effective steps to achieve practical application of the invention;

"(3) the right of the Federal agency to terminate such license in whole or in part if the licensee is in breach of an agreement obtained pursuant to paragraph (b) of this section; and

"(4) the right of the Federal agency to terminate the license in whole or in part if the agency determines that such action is necessary to meet requirements for public use specified by Federal regulations issued after the date of the license and such requirements are not reasonably satisfied by the licensee.

35 USC 210.

"§ 210. Precedence of chapter

"(a) This chapter shall take precedence over any other Act which would require a disposition of rights in subject inventions of small business firms or nonprofit organizations contractors in a manner that is inconsistent with this chapter, including but not necessarily limited to the following:

"(1) section 10(a) of the Act of June 29, 1935, as added by title I of the Act of August 14, 1946 (7 U.S.C. 427i(a); 60 Stat. 1085);

"(2) section 205(a) of the Act of August 14, 1946 (7 U.S.C. 1624(a); 60 Stat. 1090);

"(3) section 501(c) of the Federal Mine Safety and Health Act of 1977 (30 U.S.C. 951(c); 83 Stat. 742);

91 Stat. 1320.

"(4) section 106(c) of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C 1395(c); 80 Stat. 721);

"(5) section 12 of the National Science Foundation Act of 1950 (42 U.S.C. 1871(a); 82 Stat. 360);

64 Stat. 154.

"(6) section 152 of the Atomic Energy Act of 1954 (42 U.S.C. 2182; 68 Stat. 943);

68 Stat. 944.

"(7) section 305 of the National Aeronautics and Space Act of 1958 (42 U.S.C. 2457);

"(8) section 6 of the Coal Research Development Act of 1960 (30 U.S.C. 666; 74 Stat. 337);

"(9) section 4 of the Helium Act Amendments of 1960 (50 U.S.C. 167b; 74 Stat. 920);

"(10) section 32 of the Arms Control and Disarmament Act of 1961 (22 U.S.C. 2572; 75 Stat. 634);

"(11) subsection (e) of section 302 of the Appalachian Regional Development Act of 1965 (40 U.S.C. App. 302(e); 79 Stat. 5);

"(12) section 9 of the Federal Nonnuclear Energy Research and Development Act of 1974 (42 U.S.C. 5901; 88 Stat. 1878);

88 Stat. 1887.
42 USC 5908.

"(13) section 5(d) of the Consumer Product Safety Act (15 U.S.C. 2054(d); 86 Stat. 1211);

"(14) section 3 of the Act of April 5, 1944 (30 U.S.C. 323; 58 Stat. 191);

"(15) section 8001(c)(3) of the Solid Waste Disposal Act (42 U.S.C. 6981(c); 90 Stat. 2829);

"(16) section 219 of the Foreign Assistance Act of 1961 (22 U.S.C. 2179; 83 Stat. 806);

"(17) section 427(b) of the Federal Mine Health and Safety Act of 1977 (30 U.S.C. 937(b); 86 Stat. 155);

"(18) section 306(d) of the Surface Mining and Reclamation Act of 1977 (30 U.S.C. 1226(d); 91 Stat. 455);

"(19) section 21(d) of the Federal Fire Prevention and Control Act of 1974 (15 U.S.C. 2218(d); 88 Stat. 1548);

"(20) section 6(b) of the Solar Photovoltaic Energy Research Development and Demonstration Act of 1978 (42 U.S.C. 5585(b); 92 Stat. 2516);

"(21) section 12 of the Native Latex Commercialization and Economic Development Act of 1978 (7 U.S.C. 178(j); 92 Stat. 2533); and

7 USC 178j.

"(22) section 408 of the Water Resources and Development Act of 1978 (42 U.S.C. 7879; 92 Stat. 1360).

92 Stat. 1316.

The Act creating this chapter shall be construed to take precedence over any future Act unless that Act specifically cites this Act and provides that it shall take precedence over this Act.

"(b) Nothing in this chapter is intended to alter the effect of the laws cited in paragraph (a) of this section or any other laws with respect to the disposition of rights in inventions made in the perform-

ance of funding agreements with persons other than nonprofit organizations or small business firms.

"(c) Nothing in this chapter is intended to limit the authority of agencies to agree to the disposition of rights in inventions made in the performance of work under funding agreements with persons other than nonprofit organizations or small business firms in accordance with the Statement of Government Patent Policy issued on August 23, 1971 (36 Fed. Reg. 16887), agency regulations, or other applicable regulations or to otherwise limit the authority of agencies to allow such persons to retain ownership of inventions. Any disposition of rights in inventions made in accordance with the Statement or implementing regulations, including any disposition occurring before enactment of this section, are hereby authorized. Rights, disposition.

"(d) Nothing in this chapter shall be construed to require the disclosure of intelligence sources or methods or to otherwise affect the authority granted to the Director of Central Intelligence by statute or Executive order for the protection of intelligence sources or methods. Disclosure.

"§ 211. Relationship to antitrust laws 35 USC 211.

"Nothing in this chapter shall be deemed to convey to any person immunity from civil or criminal liability, or to create any defenses to actions, under any antitrust law.".

(b) The table of chapters for title 35, United States Code, is amended by adding immediately after the item relating to chapter 37 the following:

"38. Patent rights in inventions made with Federal assistance.".

SEC. 7. AMENDMENTS TO OTHER ACTS.—The following Acts are amended as follows:

(a) Section 156 of the Atomic Energy Act of 1954 (42 U.S.C. 2186; 68 Stat. 947) is amended by deleting the words "held by the Commission or".

(b) The National Aeronautics and Space Act of 1958 is amended by repealing paragraph (g) of section 305 (42 U.S.C. 2457(g); 72 Stat. 436).

(c) The Federal Nonnuclear Energy Research and Development Act of 1974 is amended by repealing paragraphs (g), (h), and (i) of section 9 (42 U.S.C. 5908 (g), (h), and (i); 88 Stat. 1889–1891).

SEC. 8. (a) Sections 2, 4, and 5 of this Act will take effect upon enactment. Effective dates. 35 USC 41 note.

(b) Section 1 of this Act will take effect on the first day of the seventh month beginning after its enactment and will apply to patents in force as of that date or issued thereafter.

(c) Section 3 of this Act will take effect on the first day of the first fiscal year beginning on or after one calendar year after enactment. However, until section 3 takes effect, the Commissioner may credit the Patent and Trademark Office appropriation account in the Treasury of the United States with the revenues from collected reexamination fees, which will be available to pay the costs to the Office of reexamination proceedings.

(d) Any fee in effect as of the date of enactment of this Act will remain in effect until a corresponding fee established under section 41 of title 35, United States Code, or section 1113 of title 15, United States Code, takes effect.

(e) Fees for maintaining a patent in force will not be applicable to patents applied for prior to the date of enactment of this Act.

(f) Sections 6 and 7 of this Act will take effect on the first day of the seventh month beginning after its enactment. Implementing regulations may be issued earlier.

(g) Sections 8 and 9 will take effect on the date of enactment of this Act.

Computerized data and retrieval system, report to Congress.
35 USC 14 note.

SEC. 9. The Commissioner of Patents and Trademarks shall report to Congress, within two years after the effective date of this Act, a plan to identify, and if necessary develop or have developed, computerized data and retrieval systems equivalent to the latest state of the art which can be applied to all aspects of the operation of the Patent and Trademark Office, and particularly to the patent search file, the patent classification system, and the trademark search file. The report shall specify the cost of implementing the plan, how rapidly the plan can be implemented by the Patent and Trademark Office, without regard to funding which is or which may be available for this purpose in the future.

SEC. 10. (a) Section 101 of title 17 of the United States Code is amended to add at the end thereof the following new language:

"Computer program."

"A 'computer program' is a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result.".

(b) Section 117 of title 17 of the United States Code is amended to read as follows:

17 USC 117.

"§ 117. Limitations on exclusive rights: Computer programs

17 USC 106.

"Notwithstanding the provisions of section 106, it is not an infringement for the owner of a copy of a computer program to make or authorize the making of another copy or adaptation of that computer program provided:

"(1) that such a new copy or adaptation is created as an essential step in the utilization of the computer program in conjunction with a machine and that it is used in no other manner, or

"(2) that such new copy or adaptation is for archival purposes only and that all archival copies are destroyed in the event that continued possession of the computer program should cease to be rightful.

"Any exact copies prepared in accordance with the provisions of this section may be leased, sold, or otherwise transferred, along with the copy from which such copies were prepared, only as part of the lease, sale, or other transfer of all rights in the program. Adaptations so prepared may be transferred only with the authorization of the copyright owner."

Approved December 12, 1980.

LEGISLATIVE HISTORY:

HOUSE REPORTS: No. 96-1307, Pt. I (Comm. on the Judiciary) and No. 96-1307, Pt. 2 (Comm. on Government Operations).
CONGRESSIONAL RECORD, Vol. 126 (1980):
Nov. 17, considered and passed House.
Nov. 20, considered and passed Senate, amended.
Nov. 21, House concurred in Senate amendment.

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DEPARTMENT OF COMMERCE

(87) Patent and Trademark Office

37 CFR Part 1

Rules of Practice in Patent Cases; Reexamination Proceedings

Agency: Patent and Trademark Office, Commerce.

Action: Final rule.

Summary: The Patent and Trademark Office is amending its rules of practice in patent cases to provide procedures for the reexamination of patents. Public Law 96–517 amended the patent act to authorize reexamination proceedings as a means for improving the quality of United States patents. The Patent and Trademark Office intends, through this amendment of its rules, to provide patent owners and the public with guidance on the procedures the Office will follow in conducting reexamination proceedings.

Date: Effective date: July 1, 1981.

For Further Information Contract: Mr. R. Franklin Burnett by telephone at [703]557-3054 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks. Washington, D.C. 20231.

Supplementary Information: This rule change relates to a procedure for reexamination of patents as provided for in Public Law 96–517, section 1 of which relates to reexamination and becomes effective on July 1, 1981.

Background

A notice of proposed rulemaking was published in the Federal Register on Jan. 13, 1981 at 46 FR 3162–3175 and in the *Official Gazette* on Feb. 17, 1981 at 1003 O.G. 36–47.

The proposed rulemaking set forth two somewhat distinct procedures directed towards determining and improving the quality and reliability of United States patents. The procedures were (1) provisions for reexamination of patents as provided for in Pub. L. 96–517, section 1 of which relates to reexamination and becomes effective on July 1, 1981, and (2) provisions for inter partes protest proceedings in a patent application between the patent applicant and a member (or members) of the public who has (have) access to the application file.

An oral hearing was held on Apr. 16, 1981. Fifty-nine written letters and statements were submitted. Nineteen persons testified at the oral hearing which resulted in 107 pages of testimony.

Discussion of General Issues Involved

After careful consideration of the comments which have been received, the part of the proposed rulemaking relating to reexamination of patents as set forth in new Chapter 30 which Pub. L. 96–517 added to Title 35 of the United States Code [35 U.S.C. 301–307] is being adopted with certain changes. The remainder of the proposal relating to inter partes protest proceedings is not being adopted.

The comments relating to the proposed rules for inter partes protest proceedings were generally mixed, with a majority of persons and associations submitting comments either opposed to these proposed rules or indicating that adoption of the proposed rules should be delayed or deferred for further study and consideration.

A number of comments were received requesting some further changes to the rules be made. The thrust of some of the suggested changes would be to remove public access to reissue applications and to limit public participation in the examination of reissue applications. The changes suggested included restoring the rules in these areas to essentially their pre-1977 form. In particular, it was suggested that §1.175 be amended to eliminate paragraph (a)(4). These changes were not a part of the published proposal and are not being adopted at this time. Their consideration and adoption would require a new notice of proposed rulemaking.

Further, since the subject matter of reissue applications is already known to the public the necessity for maintaining them in confidence is not compelling. The elimination of paragraph (a)(4) of §1.175 would not have a significant effect since less than one-fourth of the currently filed reissue applications are based solely upon the 1977 change to §1.175. Under the present circumstances, it is more appropriate to defer any consideration of such changes until this issue has been reviewed further and possibly until some experience is gained under the rules adopted herein relating to reexamination. Such experience may indicate the desirability of either retaining the 1977 change to §1.175, deleting the 1977 change, or making different changes in the rules.

The comments relating to reexamination were generally favorable with most of the comments indicating general approval of the proposed rules. Among the more often mentioned specific comments were suggestions relating to public notice of reexamination requests and/or orders. A number of comments also related to requester and/or third party participation in the reexamination proceeding and also to the scope of the proceeding.

After careful review of the comments and suggestions it has been decided to adopt the suggestions relating to the publication in the *Official Gazette* of requests for reexamination for which the fee has been paid. In addition, any reexaminations ordered at the initiative of the Commissioner will also be announced in the *Official Gazette.* The announcement will include at least the date of the request or any Commissioner initiated order, a reexamination request or order control number, the patent number, title, class and subclass, name of the inventor, name of the patent owner of record, and the examining group to which the reexamination is assigned.

The suggestions and comments relating to more participation in the reexamination proceeding by the requester and third parties have been adopted only to a limited degree. The requester will in general have only that participation provided by the rules as proposed. However, any citations under §1.501 by any person will be entered in the patent file up until the date of an order to reexamine. The essentially ex parte nature of the proceeding is believed to be in keeping with the spirit and intent of the statute even though the statute does not require ex parte proceedings. Ex parte proceedings will minimize the costs and other effects of reexamination requests on patentees, especially individuals and small businesses.

The scope of the reexamination proceeding which was originally proposed has been essentially adopted in the final rules. The suggestions that the rules be broadened to include other issues have not been adopted since the other issues would unduly complicate the proceedings, raise the expense of the proceedings and raise questions whether such issues can be considered under Pub. L. 96–517.

Discussion of the Major Specific Issues Involved

The rules relating to reexamination proceedings are directed to the procedures set forth in new Chapter 30 of Title 35 of the United States Code (35 U.S.C. 301–307). This Chapter provides for the citation of prior art in patents, filing of requests for reexamination, decisions on such requests, reexamination and appeal from reexamination decisions, and the issuance of a certificate at the termination of the reexamination proceedings. Present §§1.1, 1.5, 1.11, 1.33, 1.34, 1.36, 1.104, 1.107, 1.109, 1.111, 1.112, 1.113, 1.115, 1.116, 1.121, 1.191, 1.192, 1.196, 1.197, 1.231, 1.248, 1.301, and 1.303 are amended to provide for reexamination procedures. A new "Subpart D-Reexamination of Patents" includes new §§ 1.501, 1.510, 1.515, 1.520, 1.525, 1.530, 1.535, 1.540, 1.550, 1.552, 1.555, 1.560, 1.565, and 1.570. Paragraph (b) of §1.291, relating to prior art citations in patents, is deleted, since provisions therefor appear in §1.501.

Section 1.1, as amended, provides for communications relating to reexamination proceedings to be marked "Box Reexam" to speed internal Office mail processing. No comments were received concerning this section.

The proposal has been modified to indicate that only requests should be marked "Box Reexam".

Section 1.5, as amended, provides for all letters relating to a reexamination proceeding to be identified by patent number and a reexamination request control number. No comments were received concerning this section. Section 1.5 has been modified to also include reference to the Group Art Unit and the examiner, if known.

Section 1.11, as amended, provides for all papers made of record in reexamination proceedings to be open to inspection and copying by the public. Eighteen comments were received relating to publication of a notice in the *Official Gazette*. A new paragraph (c) has been added which provides for the publication of requests with sufficient fees paid and orders initiated by the Commissioner. Proposed paragraph "c" has been adopted as paragraph "d".

Section 1.33, as amended, has a new paragraph (c) relating to which address communications for the patent owner will be sent and who may sign papers filed. Four comments were received on this section relating to whom the mail should be addressed. One proposal, which suggested use of the current address of the attorney or agent of record, was adopted.

Section 1.34, as amended, provides for the appointment of an attorney or agent in a reexamination proceeding. Only one comment was received on this section which proposed a rule specifically allowing attorneys to file requests without identifying their clients. Since any person may request reexamination, such a rule is not felt necessary.

Section 1.36, as amended, provides for the revocation and withdrawal of powers of attorney in a reexamination proceeding. No comment was received. Section 1.36 is adopted as proposed with an additional change which added "or her" near the end.

Section 1.104, as amended, broadens the present section to also include reexamination. Three comments were received on §1.104. All comments indicated that the examiner should not make a prior art search. Although no complete new search by the examiner is required, the use of patents and printed publications in addition to those submitted by the requester is clearly indicated in 35 U.S.C. 303(a). According, §1.104 is adopted as proposed.

Section 1.107, as amended, provides for the citation of prior art by the examiner in a reexamination proceeding. The amended rule also refers to foreign published applications, as well as patents. No comments were received on this section. It is adopted as proposed.

Section 1.109, as amended, provides for the examiner to supply reasons for allowance in a reexamination proceeding if the examiner believes that the record does not make clear the reasons for allowing a claim or claims. No comments were received on this section. Except for a clarifying change in language, it is adopted as proposed.

Section 1.111, as amended, provides for replies by the patent owner in a reexamination proceeding. One comment was received which suggested a clarification. The suggestion was adopted. Other non-substantive changes have been made in the proposed section to shorten the sentences for clarity.

Section 1.112, as amended, provides for reexamination and reconsideration of the patent under reexamination after responses by the patent owner. Three comments were received on this section.

The wording has been changed as suggested to avoid any confusion between "reexamination" and "reexamine". The sentences have also been shortened for clarity.

Section 1.113, as amended, provides for a final rejection or action in a reexamination proceeding. One comment was received which pointed out a possible conflict between the amendment rights of section 305 and the final rejection of section 1.113. No problem is seen in this regard because of the provision of section 305 which states that "reexamination will be conducted according to the procedures established for initial examination." The section is adopted as proposed with the last sentence being divided into two sentences for clarity.

Section 1.115, as amended, provides for amendments by the patent owner in a reexamination proceeding. No comments were received concerning this section. The section is adopted as proposed with minor changes for clarity.

Section 1.116, as amended, provides for amendments after final action in reexamination proceedings. One comment was received which was the same as that mentioned and responded to in Section 1.113 above. The sentences have been shortened for clarity.

Section 1.121, as amended, contains a new paragraph (f) which requires a complete copy of any new or amended claim when presented during reexamination proceedings. Two persons commented on this section. One proposed side-by-side presentation of amended and original claims. The other proposed that exactly the same procedure be used as is now in effect for amending reissue claims. Neither suggestion was adopted since neither lends itself to printing only the amended claims in a certificate as easily as the procedure set forth in §1.121(f). The proposed section was revised to also provide for the amendment of the description. In addition, the last three sentences of §1.510(e) have been inserted as the last three sentences of §1.121(f) in order to provide a more complete description therein of the manner of making amendments, including the numbering of claims, the restriction on scope of the claims and the prohibition against the introduction of new matter.

Section 1.191, as amended, provides for appeal to the Board of Appeals by the patent owner from any decision adverse to patentability, in accordance with 35 U.S.C. 306. One comment was received on proposed §1.191 which urged that the requester should also be entitled to appeal. This proposal was not adopted because it is not provided for in the law and could result in harassment if permitted. The section is adopted as proposed except that "primary" contained in the existing rule is retained.

Section 1.192, as amended, provides two months from the date of the Notice of Appeal for the patent owner to file an appeal brief in a reexamination proceeding. Five comments were received relating to §1.192 which proposed that the period for filing an appeal brief in a reexamination appeal be two months as in other appeals. The proposed rule has been adopted with the suggested two month period. The sentences have been shortened for clarity.

Section 1.196 and §1.197 are being amended to refer to "appellants", which is a term which includes both applicants and patent owners.

These two sections were not published for comment, however, the issues involved were presented in proposed §§1.191 and 1.192. Paragraph (c) of §1.197 has also been rewritten for clarity.

Section 1.231(a)(1), as amended, provides for a motion that a patent claim is unpatentable in an interference proceeding where reexamination thereof has also been requested.

Three comments were received concerning §1.231. All comments related to when interference or reexamination proceedings would be suspended. Section 1.565 provides basis for such suspensions. Decisions will be made on a case by case basis, depending on the particular fact situation. The sentences in §1.231(a)(1) have been shortened and rearranged for clarity.

An amendment was proposed to delete the last two sentences of §1.247 relating to proof of service. No comments were received concerning this section but, on reconsideration, no need for such deletion is felt necessary and no change is being adopted.

Section 1.248, as amended, includes a new paragraph (b) relating to methods of serving papers and proof of service. No comments were received concerning this section. The section is adopted as proposed with minor changes for clarity and to conform to the Federal Rules of Civil Procedure.

Section 1.291, as amended, deletes paragraph (b). Former paragraph (b) dealt with the citation of prior art

provisions. It was deleted since the provisions are now covered by §1.501. Five persons commented on §1.291. One comment relating to filing protests in reexamination proceedings was not adopted since such proceedings are ex parte in nature and are limited to consideration of prior art patents and printed publications cited by the public prior to the order. Two persons mentioned providing a procedure for citation of prior art by patentees. Citation of prior art by patentees is included in §1.501. The two other comments related to the content of protest proceedings, which are not part of this final rule. Section 1.291 is adopted as proposed except that the paragraph designation of (c) is not being changed.

Section 1.301, as amended, provides for appeal by the owner of a patent in reexamination proceedings to the U.S. Court of Customs and Patent Appeals. Four comments were received relating to §1.301. One person suggested the insertion of "any" as the fourth word in the section. This suggestion was adopted. The other three comments related to appeals in inter partes protest proceedings which are not a part of this promulgation. Section 1.301 is adopted as proposed with only the above mentioned change.

Section 1.303, as amended, provides for remedy by civil action under 35 U.S.C. 145 for the owner of a patent in reexamination proceedings. No comments were received concerning this section. The changes from the proposal are the insertion of "any" as the fourth word in the section as suggested in §1.301 and the addition of, "306" to the title.

New §1.501 provides a system for citation of patents and printed publications to the Patent and Trademark Office for placement in the patent file by any person during the period of enforceability of the patent in accordance with 35 U.S.C. 301. Seventeen persons commented on §1.501. Nine comments indicated that citations should be limited to patents or printed publications. Six comments indicated that persons citing art should be required to apply it to at least one claim. Three persons held the opposite view. The final rule wording provides for citations limited to patents and printed publications where the person making the citation states the pertinency and applicability of the citation to the patent and the bearing the citation has on the patentability of at least one claim of the patent. The final rule provides that a citation made by the patent owner may include an explanation of how the claims differ from the prior art cited. Any citations which include items other than patents and printed publications will not be entered in the patent file. This does not, of course, limit in any manner the kinds and types of information which can be relied upon in protests against pending patent applications, whether such be original applications or reissue applications. Four persons stated that a separate letter requesting confidentiality should be required in cases desiring confidentiality. This provision was not considered to be necessary. One comment requested clarification of the term "period of enforceability of a patent." The meaning of this term appears to be clear since it includes any period for which recovery can be had for infringement. Under usual circumstances, this would be the term of the patent plus the six years provided by 35 U.S.C. 286. Five comments were received relating the paragraph (c) concerning service of citations on the patent owner. The wording has been clarified. A suggestion was made that prior art copies and translations of non-English documents be required. This suggestion was not adopted since such documents are not absolutely essential until a request for reexamination has been filed. However, if the person citing the patents or printed publications desires that they be considered in any subsequent reexamination proceedings, copies and any necessary English translation should be included with the citation. A proposal was also made to charge a fee to prevent harassment. This proposal was not adopted since the mere citation of prior art is not considered to constitute harassment. A suggestion was made to change the title of the section. This suggestion was adopted in slightly modified form.

New §1.510 sets forth procedures for any person to request reexamination in accordance with 35 U.S.C. 302. Paragraph (a) of new §1.510 limits the period for such request to the period of enforceability of the patent for which the request is filed and requires payment of the fee for requesting reexamination. Paragraph (b) of new §1.510 indicates what each request for reexamination must include. Paragraph (c) of new §1.510 indicates under which conditions a request for reexamination will be considered. Paragraph (d) of new §1.510 indicates the date on which the entire fee is received will be considered to be the date of the request for reexamination. Upon reconsideration of the paragraph as proposed, it was considered more appropriate to base the filing date of the request for reexamination on the receipt of the fee for requesting reexamination rather than include other matters. Proposed paragraph (d) has been amended accordingly and is adopted. Paragraph (e) of new §1.510 covers amendments which a patent owner can propose. Such amendments can accompany a request for reexamination by the patent owner. The paragraph, with changes in wording for clarity, is adopted as proposed. A new paragraph (f) was added to clarify that requests for reexamination may be filed by attorneys or agents on behalf of a requester. Nineteen persons commented on § 1.510. One person inquired as to whether confidential requests would be accepted. In response thereto, §1.510 provides that any person may file a request for reexamination. That person's name will not be maintained in confidence. One suggestion was made to permit comment and rebuttal before the decision under § 1.515. No need for such a procedure is seen since the only question to be considered is whether or not a substantial new question of patentability has been raised. An opportunity for comment and rebuttal is provided after the issuance of the order. One comment was received which desired provision for supplemental requests at a reduced fee. This proposal was not adopted since it is felt that all requesters should share equally in the cost. One comment was received which proposed that duplicate copies of the request be filed in the Office so that one copy would be available for public inspection at all times. This proposal was not adopted since it would appear to create more problems than it would solve. One comment was received that only "readily available" translations should be required. It is felt that if a document is considered to be sufficiently pertinent to request reexamination, that an English translation should be provided to insure complete and proper consideration. A suggestion was made relating to paragraph (b)(5) that direct service be limited to registered patent attorneys. No need for such a restriction is seen. Various other comments relating to procedures were considered but were not adopted.

New §1.515 relates to a determination as to whether the request has presented a substantial new question of patentability under 35 U.S.C. 303. Paragraph (a) of new §1.515 requires that the determination be made within 3 months of the filing date of the request. Paragraph (b) of new §1.515 refers to the refund provisions. Paragraph (c) of new §1.515 provides for review by petition to the Commissioner of any decision refusing reexamination. Seven persons commented on §1.515. Several comments were received suggesting that the term "reexamination" should be dropped before "examiner". This proposal was adopted. Several persons requested that all art cited in the patent file at the time of the order under §1.525 be considered when deciding whether a substantial new question of patentability is presented in the request. This is possible under the provision of §1.515(a) which permits "consideration of other patents or printed publications", but is not required insofar as prior art not relied upon in the request is concerned. One person suggested that "is" be changed to-affirms-in paragraph (c). This proposal has been adopted. One commentor questioned whether a right to review was available under paragraph (c) if reexamination was ordered. No right to review exists in such a case because all claims will be reviewed in view of all prior art during the reexamination under §1.550.

New §1.520 provides for reexamination at the initia-

tive of the Commissioner under the provisions of the last sentence of paragraph (a) of 35 U.S.C. 303. Six persons commented on §1.520. One comment was received that indicated that the section did not include a reference to patents "discovered by the Commissioner" which is contained in 35 U.S.C. 303(a). This phrase has been added to the rule. A request was made that the sentence "Normally requests from outside-will not be considered." be deleted from the rule. The sentence is being retained since the rule wording provides an easy reference for Office policy. Two comments were received that indicated a desire to have any decisions not to reexamine in Commissioner initiated situations be made part of the patent file. This proposal was not adopted since the basis for not reexamining may involve many policy issues in addition to whether a substantial new question of patentability exists in the case. If all papers in such a case would be made part of a file, it may lead to conclusions that there are no new questions of patentability when this question may not have been addressed because the reexamination was not ordered for other reasons such as little or no interest in a patent about to expire. One comment stated that the section safeguards the rights of the patentee. The language referring to the designation and delegation of authority to appropriate Patent and Trademark Office officials is deleted as unnecessary since the Commissioner's authority to designate and delegate is implicit and understood.

New §1.525 provides for ordering reexamination where a substantial new question of patentability has been found pursuant to §§1.515 or 1.520. Six comments were received relating to §1.525. One comment was made that the attorney should be able to return notices to the sender if he is unable to contact the patent owner. This topic has not been added to the rules but will be handled on a case by case basis. One comment requested that the patent owner have the option to request that the reexamination be performed by an examiner (1) other than the original examiner, or (2) other than the examiner who issued the order. Comments were also received on both sides of the question as to whether the original examiner should conduct the reexamination. In response, it would appear to be inappropriate to allow an interested party to select the examiner. Under the section, the only limitation placed on the selection of the examiner by the Office is that the same examiner whose decision was reversed on petition ordinarily will not conduct the reexamination. Paragraph (b) has been changed to provide that the notices published in the *Official Gazette* will be considered to be constructive notice.

New §1.530 relates to the statement and proposed amendments provided for in the second sentence of 35 U.S.C. 304. Amendments submitted by the patent owner cannot enlarge the scope of a claim in the patent. Amendments will not be effectively entered into the patent until the certificate under §1.570 and 35 U.S.C. 307 is issued. Nine comments were received on §1.530. Several persons felt that the patent owner should be allowed to comment before the decision under §1.515 is made. Providing for such a comment would delay the decision under §1.515 which must be made within three months following the filing date of the request. Further, no need is seen for a statement relating to whether a new question of patentability is present since the patent owner has the opportunity to address any issues of patentability only after the first Office action. One comment questioned whether paragraph (d) also related to the description. This paragraph has been amended to clarify the matter. One person questioned whether an amendment could be filed with a statement. Paragraph (b) clearly answers this question in the affirmative. Several comments requested more time than two months for the patent owner to file a statement. In reply, the law in section 304 indicates that a reasonable period of not less than two months be provided for the patent owner's statement. If the period is too short in particular situations, extensions of time can be requested. It is felt that two months should be retained in the rule in view of the "Special Dispatch" required in reexamination cases. The proposed second sentence of paragraph (b) has not been adopted since §1.525(b) now provides for the publication of notices of the filing of all requests which are accompanied by the proper fee.

New §1.535 provides for reply by the reexamination requester to the statement under §1.530 of the patent owner and for service on the patent owner of any such reply. The last sentence of proposed §1.540 has been added as the last sentence of §1.535. Five persons commented on §1.535. Four persons indicated that the requester should be given additional opportunity to comment. The reasons for the limited participation are that it is all that is required under the law, it prevents to a great degree, harassment of a patent owner, it results in a less expensive proceeding for all parties, and it results in an earlier conclusion of the proceedings.

New §1.540 relates to the consideration of statements under §1.530 and replies under §1.535. One comment was received that the phrase "may result in their being refused" was worded too loosely. In the absence of any specific suggestion, the proposed wording is considered to be adequate and is adopted as proposed. In addition, it is appropriate that the Office retain discretion as to consideration in such cases.

New §1.550 covers the basic items relating to the conduct of reexamination proceedings. These proceedings basically follow the same procedures used for examining patent applications. The patent owner will be required to serve the reexamination requester with any response by the patent owner to the Office, in order to remove the necessity of the requester having to continuously monitor the file wrapper. Fourteen persons commented on §1.550.

Several persons commented that they felt that at least some input by third parties should be permitted. Paragraph (e) has been revised to permit third party input up until the time of the order. Several comments were received that the periods for response should be extended to be similar to those in regular application Office actions. Although problems may arise in certain cases and extensions of time may be granted, it is felt that relatively short response times are necessary in order to process reexaminations with "special dispatch." A question was raised as to the effect of failure to respond to an Office action. Paragraph (d) has been amended to clarify this matter.

New §1.552 covers the scope of reexamination in a reexamination proceeding. While it is not intended that the examiners will routinely complete a new search when conducting reexamination, the examiners will be free to, and will, very likely, conduct additional searches and cite and apply additional prior patents and publications when they consider it is appropriate and beneficial to do so. Insofar as the actual reexamination is concerned, the examination as to original patent claims is only on the basis of patents or printed publications. However, narrowed amended claims or new claims limited to the original disclosure will also be examined for compliance with other sections of the statute (35 U.S.C. 112 and 132) which are necessary in order to ensure that any amended or new claims are supported, valid, and do not introduce new matter. New §1.552 also provides that questions relating to matters other than those identified in paragraphs (a) and (b) of the section would merely be noted by the examiner as being an open question in the record. Patent owners could then file a reissue application if they wish such questions to be resolved. Ten persons commented on §1.552. Several persons commented that the question of fraud should be considered in reexamination proceedings. Comments were also received that the proceedings should be limited to patents and printed publications. The rules have been written to follow the statute which speaks only to reexamination based on patents and printed publications. Mixed comments were also received concerning the retention of the second sentence of paragraph (c). The paragraph is being adopted as proposed with the addition of a reference to the fact that the examiner will note the existence of unresolved questions in an Office action. In addition, the phrase "raised or" has been deleted from paragraph (c) as unnecessary.

New §1.555 covers the duty of disclosure by a patent owner in a reexamination proceeding involving the owner's patent. Nine persons commented on §1.555. Four persons supported placing a duty of disclosure on the patent owner. One comment was received that an oath or declaration be required of the patent owner in a reexamination so as to minimize the appearance and occurrence of any fraudulent acts and to emphasize the patentee's obligation of candor. While the suggestion for an oath or declaration has not been adopted, §1.555 does place an obligation of candor on the patent owner insofar as bringing patents or printed publications to the attention of the Office is concerned. The necessity for an oath or declaration in addition to the obligation placed on the patent owner by §1.555 is not apparent at this time. Accordingly, the suggestion has not been adopted. Two persons felt the duty of disclosure should apply to both the patent owner and requester. This proposal was not adopted since no sanction could be easily applied against the requester who violated such a rule. One person suggested broadening the duty requirements to include information in addition to patents and printed publications. Although such a practice may be desirable, no need is seen to require information under the reexamination rules which cannot be used during the reexamination. One person felt that there should be no duty of disclosure requirement in reexamination proceedings since the Office will be considering specific prior art and the presence or absence of other prior art does not seem terribly relevant. This suggestion was not adopted since the issue of patentability is not limited to the specific prior art presented and the duty to disclose is consistent with current practice under §1.56. The section is adopted as proposed except for the indication that prior art statements should be filed in accordance with §1.98. Also, the section has been divided into two sentences for clarity.

New §1.560 relates to the conduct of interviews in reexamination proceedings. Seven comments were received directed to §1.560. One comment requested elimination of interviews. This suggestion was not adopted since interviews have been found to be very helpful in resolving issues. Five comments were received which indicated that the requester should be permitted to attend all interviews. This suggestion was not adopted because of the otherwise ex parte nature of the examination. Two comments were received which indicated that interviews should be permitted before the first Office action. This suggestion was not adopted since such interviews would be held at a time when the Office has not yet taken a position on the allowability of the claims under reexamination. Section 1.560 is adopted as proposed.

New §1.565 provides for the Commissioner to determine which, if any, proceedings should be stayed, consolidated, or suspended, if concurrent proceedings involving the patent under reexamination are instituted or in progress. Four comments were received concerning §1.565. One comment pointed out the desirability of combining copending reexamination proceedings. This concept has been accepted and a new paragraph (c) has been added to cover this matter. Two comments voiced concern over the possibility of delay resulting from stayed, suspended or combined cases. Although some delay may result, it is felt that a resolution of all issues should occur at an earlier date. Decisions as to whether to delay or combine cases will be made on a case by case basis to minimize delays and to protect the interests of all parties concerned. One comment was made to allow the patent owner to comment prior to any decision to stay proceedings by the Commissioner. The desirability of such comment will be decided on a case by case basis and is not considered desirable for placement in the rules. The addition of paragraph (c) and the insertion of "is or" before "becomes" in the first sentence of paragraph (b) are the only changes from the proposed rule.

New §1.570 concerns the issuance of the reexamination certificate under 35 U.S.C. 307 after conclusion of reexamination proceedings. The certificate will cancel any patent claims determined to be unpatentable, confirm any patent claims determined to be patentable, and incorporate into the patent any amended or new claim determined to be patentable. Three commentors mentioned §1.570. Two persons questioned the statutory authority for paragraph (d). In response to the concern for statutory authority, it is the position of the Office that once all of the claims have been canceled from the patent, the patent ceases to be enforceable for any purpose. Accordingly, any pending reissue or other Office proceeding relating to a patent in which such a certificate has been issued will be terminated. This provides a degree of assurance to the public that patents with all the claims canceled via reexamination proceedings will not again be asserted. One commentor indicated that copies of the certificate should be part of subsequently sold copies of the patent. Such a practice is intended but is not being made part of the regulations.

Environmental, energy, and other consideration: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96–354).

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291.

Amendment of Regulations

For the reasons set out in the preamble and under the authority given to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, Part I of Title 37 CFR is amended as set forth below.

1. Section 1.1 is revised to read as follows:

§1.1 All communications to be addressed to Commissioner of Patents and Trademarks.

(a) All letters and other communications intended for the Patent and Trademark Office must be addressed to "Commissioner of Patents and Trademarks," Washington, D.C. 20231. When appropriate, a letter should also be marked for the attention of a particular officer or individual.

(b) Letters and other communications relating to international applications during the international stage and prior to the assignment of a national serial number should be additionally marked "Box PCT."

(c) Requests for reexamination should be additionally marked "Box Reexam."

Note.—§§1.1 to 1.26 are applicable to trademark cases as well as to national and international patent cases except for provisions specifically directed to patent cases. See §1.9 for definitions of "national application" and "international application." (Pub. L. 94—131, 89 Stat. 685)

2. Section 1.5 is amended by adding a new paragraph (d) to read as follows:

§1.5 Identification of application, patent or registration

* * * * *

(d) A letter relating to a reexamination proceeding should identify it as such by the number of the patent undergoing reexamination, the reexamination request control number assigned to such proceeding and if known, the group art unit and name of the examiner to which it has been assigned.

3. Section 1.11 is amended by adding new paragraphs (c) and (d) to read as follows:

§1.11 Files open to the public.

* * * * *

(c) All requests for reexamination for which the fee under §1.21 (x) has been paid, will be announced in the *Official Gazette.* Any reexaminations at the initiative of the Commissioner pursuant to §1.520 will also be announced in the *Official Gazette.* The announcement shall include at least the date of the request, if any, the reexamination request control number or the Commissioner initiated order control number, patent number, title, class and subclass, name of the inventor, name of the patent owner of record, and the examining group to

which the reexamination is assigned.

(d) All papers or copies thereof relating to a reexamination proceeding which have been entered of record in the patent or reexamination file are open to inspection by the general public, and copies may be furnished upon paying the fee therefor.

4. Section 1.33 is amended by revising the heading and adding a new paragraph (c) to read as follows:

§1.33 Correspondence respecting patent applications, reexamination proceedings, and other proceedings.

* * * * *

(c) All notices, official letters, and other communications for the patent owner or owners in a reexamination proceeding will be directed to the attorney or agent or record (see §1.34(b)) in the patent file at the address listed on the register of patent attorneys and agents maintained pursuant to §§1.341 and 1.347 or, if no attorney or agent is of record, to the patent owner or owners at the address or addresses or record. Amendments and other papers filed in a reexamination proceeding on behalf of the patent owner must be signed by the patent owner, or if there is more than one owner by all the owners, or by an attorney or agent of record in the patent file, or by a registered attorney or agent not of record who acts in a representative capacity under the provisions of §1.34(a). Double correspondence with the patent owner or owners and the patent owner's attorney or agent, or with more than one attorney or agent, will not be undertaken. If more than one attorney or agent is of record and a correspondence address has not been specified, correspondence will be held with the last attorney or agent made of record.

5. Section 1.34 is revised to read as follows:

§1.34 Recognition for representation.

(a) When a registered attorney or agent acting in a representative capacity appears in person or signs a paper in practice before the Patent and Trademark Office in a patent case, his or her personal appearance or signature shall constitute a representation to the Patent and Trademark Office that under the provisions of this part and the law, he or she is authorized to represent the particular party in whose behalf he or she acts. In filing such a paper, the attorney or agent should specify his or her registration number with his or her signature. Further proof of authority to act in a representative capacity may be required.

(b) When an attorney or agent shall have filed his or her power of attorney, or authorization, duly executed by the person or persons entitled to prosecute an application or a patent involved in a reexamination proceeding, he or she is a principal attorney of record in the case. A principal attorney or agent, so appointed, may appoint an associate attorney or agent who shall also then be of record.

6. Section 1.36 is revised to read as follows:

§1.36 Revocation of power of attorney or authorization, withdrawal of attorney or agent.

A power of attorney or authorization of agent may be revoked at any stage in the proceedings of a case, and an attorney or agent may withdraw, upon application to and approval by the Commissioner. An attorney or agent, except an associate attorney or agent whose address is the same as that of the principal attorney or agent, will be notified of the revocation of his or her power of attorney or authorization, and the applicant or patent owner will be notified of the withdrawal of the attorney or agent. An assignment will not of itself operate as a revocation of a power or authorization previously given, but the assignee of the entire interest may revoke previous powers and be represented by an attorney or agent of his or her own selection.

7. In §1.104, paragraphs (a) and (b) are revised to read as follows:

§1.104 Nature of examination, examiner's action.

(a) On taking up an application for examination or a patent in a reexamination proceeding, the examiner shall make a thorough study thereof and shall make a thorough investigation of the available prior art relating to the subject matter of the claimed invention. The examination shall be complete with respect both to compliance of the application or patent under reexamination with the applicable statutes and rules and to the patentability of the invention as claimed, as well as with respect to matters of form, unless otherwise indicated.

(b) The applicant, or in the case of a reexamination proceeding, both the patent owner and the requester, will be notified of the examiner's action. The reasons for any adverse action or any objection or requirement will be stated and such information or references will be given as may be useful in aiding the applicant, or in the case of a reexamination proceeding the patent owner, to judge the propriety of continuing the prosecution.

* * * * *

8. Section 1.107 is revised to read as follows:

§1.107 Citation of references.

(a) If domestic patents are cited by the examiner, their numbers and dates, and the names of the patentees, and the classes of inventions must be stated. If foreign published applications or patents are cited, their nationality or country, numbers and dates, and the names of the patentees must be stated, and such other data must be furnished as may be necessary to enable the applicant, or in the case of a reexamination proceeding, the patent owner, to identify the published applications or patents cited. In citing foreign published applications or patents, in case only a part of the document is involved, the particular pages and sheets containing the parts relied upon must be identified. If printed publications are cited, the author (if any), title, date, pages or plates, and place of publication, or place where a copy can be found, shall be given.

(b) When a rejection in an application is based on facts within the personal knowledge of an employee of the Office, the data shall be as specific as possible, and the reference must be supported, when called for by the applicant, by the affidavit of such employee, and such affidavit shall be subject to contradiction or explanation by the affidavits of the applicant and other persons.

9. Section 1.109 is revised to read as follows:

§1.109 Reasons for allowance.

If the examiner believes that the record of the prosecution as a whole does not make clear his or her reasons for allowing a claim or claims, the examiner may set forth such reasoning. The reasons shall be incorporated into an Office action rejecting other claims of the application or patent under reexamination or be the subject of a separate communication to the applicant or patent owner. The applicant or patent owner may file a statement commenting on the reasons for allowance within such time as may be specified by the examiner. Failure to file such a statement shall not give rise to any implication that the applicant or patent owner agrees with or acquiesces in the reasoning of the examiner.

10. Section 1.111 is revised to read as follows:

§1.111 Reply by applicant or patent owner.

(a) After the Office action, if adverse in any respect, the applicant or patent owner, if he or she persists in his or her application for a patent or reexamination proceeding, must reply thereto and may request reconsideration or further examination, with or without amendment.

(b) In order to be entitled to reconsideration or further examination, the applicant or patent owner must make request therefor in writing. The reply by the applicant or patent owner must distinctly and specifically point out the supposed errors in the examiner's action and must respond to every ground of objection and rejection in the prior Office action. If the reply is with respect to an application, a request may be made that objections or requirements as to form not necessary to further consideration of the claims be held in abeyance until allowable subject matter is indicated. The appli-

cant's or patent owner's reply must appear throughout to be a bona fide attempt to advance the case to final action. A general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references does not comply with the requirements of this section.

(c) In amending in response to a rejection of claims in an application or patent undergoing reexamination, the applicant or patent owner must clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. He or she must also show how the amendments avoid such references or objections. (See §§1.135 and 1.136 for time for reply.)

11. Section 1.112 is revised to read as follows:

§1.112 Reconsideration.

After response by applicant or patent owner (§1.111), the application or patent under reexamination will be reconsidered and again examined. The applicant or patent owner will be notified if claims are rejected, or objections or requirements made, in the same manner as after the first examination. Applicant or patent owner may respond to such Office action in the same manner provided in §1.111, with or without amendment. Any amendments after the second Office action must ordinarily be restricted to the rejection or to the objections or requirements made. The application or patent under reexamination will be again considered, and so on repeatedly, unless the examiner has indicated that the action is final.

12. Section 1.113 is amended by revising paragraph (a) to read as follows:

§1.113 Final rejection or action.

(a) On the second or any subsequent examination or consideration the rejection or other action may be made final, whereupon applicant's or patent owner's response is limited to appeal in the case of rejection of any claim (§1.191), or to amendment as specified in §1.116. Petition may be taken to the Commissioner in the case of objections or requirements not involved in the rejection of any claim (§1.181). Response to a final rejection or action must include cancellation of, or appeal from the rejection of, each rejected claim. If any claim stands allowed, the response to a final rejection or action must comply with any requirements or objection as to form.

* * * * *

13. Section 1.115 is revised to read as follows:

§1.115 Amendment.

The applicant may amend before or after the first examination and action and also after the second or subsequent examination or reconsideration as specified in § 1.112 or when and as specifically required by the examiner. The patent owner may amend in accordance with §§1.510(e) and 1.530(b) prior to reexamination, and during reexamination proceedings in accordance with §§1 .112 and 1.116.

14. Section 1.116 is amended by revising paragraphs (a) and (b) to read as follows:

§1.116 Amendments after final action.

(a) After final rejection or action (§1.113) amendments may be made cancelling claims or complying with any requirement of form which has been made. Amendments presenting rejected claims in better form for consideration on appeal may be admitted. The admission of, or refusal to admit, any amendment after final rejection, and any proceedings relative thereto, shall not operate to relieve the application or patent under reexamination from its condition as subject to appeal or to save the application from abandonment under §1.135.

(b) If amendments touching the merits of the application or patent under reexamination are presented after final rejection, or after appeal has been taken, or when such amendment might not otherwise be proper, they may be admitted upon a showing of good and sufficient reasons why they are necessary and were not earlier presented.

* * * * *

15. Section 1.121 is amended by adding a new paragraph (f) to read as follows:

§1.121 Manner of making amendments.

* * * * *

(f) Proposed amendments presented is patents involved in reexamination proceedings must be presented in the form of a full copy of the text of (1) each claim which is amended and (2) each paragraph of the description which is amended. Matter deleted from the patent shall be placed between brackets and matter added shall be underlined. Copies of the printed claims from the patent may be used with any additions being indicated by carets and deleted material being placed between brackets. Claims must not be renumbered and the numbering of the claims added for reexamination must follow the number of the highest numbered patent claim. No amendment may enlarge the scope of the claims of the patent. No new matter may be introduced into the patent.

16. Section 1.191 is revised to read as follows:

§1.191 Appeal to Board of Appeals.

(a) Every applicant for a patent or for reissue of a patent, or every owner of a patent under reexamination, any of the claims of which have been twice rejected, or who has been given a final rejection (§1.113), may, upon the payment of the fee required by law, appeal from the decision of the primary examiner to the Board of Appeals within the time allowed for response.

(b) The appeal in an application must identify the rejected claim or claims appealed, and must be signed by the applicant or duly authorized attorney or agent. An appeal in a reexamination proceeding must identify the rejected claim or claims appealed, and must be signed by the patent owner or duly authorized attorney or agent.

(c) Except as otherwise provided by §1.206, an appeal when taken must be taken from the rejection of all claims under rejection which the applicant or patent owner proposes to contest. Questions relating to matters not affecting the merits of the invention may be required to be settled before an appeal can be considered.

17. Section 1.192 is amended by revising paragraph (a) to read as follows:

§1.192 Appellant's brief.

(a) The appellant shall, within 2 months from the date of the notice of appeal under §1.191 in an application, reissue application, or patent under reexamination, or within the time allowed for response to the action appealed from, if such time is later, file a brief in triplicate. The brief must be accompanied by the requisite fee and must set forth the authorities and arguments on which the appellant will rely to maintain the appeal. The brief must include a concise explanation of the invention which should refer to the drawing by reference characters, and a copy of the claims involved. Appellant must also indicate at the time of filing the brief if an oral hearing is desired. Upon a showing of sufficient cause, the Commissioner may grant extensions of time for filing the brief. The determination of such requests may be delegated by the Commissioner to appropriate Patent and Trademark Office officials. All requests for extensions must be filed prior to the expiration of the period sought to be extended. The filing of a request for extension of time does not stay any period unless and until granted.

* * * * *

18. Section 1.196 is amended by revising paragraphs (b), (c) and (d) to read as follows:

§1.196 Decision by the Board of Appeals.

* * * * *

(b) Should the Board of Appeals have knowledge of any grounds not involved in the appeal for rejecting any

appealed claim, it may include in the decision a statement to that effect with its reasons for so holding, which statement shall constitute a rejection of the claims. The appellant may submit an appropriate amendment of the claims so rejected or a showing of facts, or both, and have the matter reconsidered by the primary examiner. The statement shall be binding upon the primary examiner unless an amendment or showing of facts not previously of record be made which, in the opinion of the primary examiner, avoids the additional ground for rejection stated in the decision. The appellant may waive such reconsideration before the primary examiner and have the case reconsidered by the Board of Appeals upon the same record before them. Where request for such reconsideration is made the Board of Appeals shall, if necessary, render a new decision which shall include all grounds upon which a patent is refused. The appellant may waive reconsideration by the Board of Appeals and treat the decision, including the added grounds for rejection given by the Board of Appeals, as a final decision in the case.

(c) Should the decision of the Board of Appeals include an explicit statement that a claim may be allowed in amended form, appellant shall have the right to amend in conformity with such statement, which shall be binding on the primary examiner in the absence of new references or grounds of rejection.

(d) Although the Board Appeals normally will confine its decision to a review of rejections made by the primary examiner, should it have knowledge of any grounds for rejecting any allowed claim that it believes should be considered, it may include in its decision a statement to that effect and remand the case to the primary examiner for consideration thereof. In such event, the Board shall set a period, not less than one month, within which the appellant may submit to the primary examiner an appropriate amendment, or a showing of facts or reasons, or both, in order to avoid the grounds set forth in the statement of the Board of Appeals. If the primary examiner rejects the previously allowed claim or claims on the basis of such statement, the appellant may appeal to the Board of Appeals from the rejection. Whenever a decision of the Board of Appeals includes a remand, that decision shall not be considered as a final decision in the case, but the Board of Appeals shall, upon conclusion of the proceedings before the primary examiner on remand, either adopt its decision as final or render a new decision on all of the claims on appeal, as it may deem appropriate.

19. Section 1.197 is amended by revising paragraphs (a) and (c) to read as follows:

§1.197 Action following decision.

(a) After decision by the Board of Appeals, the case shall be returned to the primary examiner, subject to the appellant's right of appeal or other review, for such further action by the appellant or by the primary examiner, as the condition of the case may require, to carry into effect the decision.

* * * * *

(c) Proceedings are considered terminated by the dismissal of an appeal or the failure to timely file an appeal to the court or a civil action (§1.304) except (1) where claims stand allowed in an application or (2) where the nature of the decision requires further action by the examiner. In such cases, the date of termination of proceedings is the date on which the appeal is dismissed or the date on which the time for appeal to the court or review by civil action (§1.304) expires. If an appeal to the court or a civil action has been filed, proceedings are similarly considered terminated when the appeal or civil action is terminated.

20. Section 1.231 is amended by revising paragraph (a)(1) to read as follows:

§1.231 Motions before the primary examiner.

(a) Within the period set in the notice of interference for filing motions any party to an interference may file a motion seeking:

(1) To dissolve as to one or more counts, except that such motion based on facts sought to be established by affidavits, declarations or evidence outside of official records and printed publications will not normally be considered. A motion to dissolve an interference in which a patentee is a party on the ground that the claims corresponding to the courts are unpatentable to the patentee over patents or printed publications will be considered through reexamination if it complies with the requirements of §1.510(b) and is accompanied by the fee for requesting reexamination set in §1.21(x). Otherwise, a motion to dissolve an interference in which a patentee is a party will not be considered if it would necessarily result in the conclusion that the claims of the patent which correspond to the counts are unpatentable to the patentee on a ground which is not ancillary to priority. Where a motion to dissolve is based on prior art, service on opposing parties must include copies of such prior art. A motion to dissolve on the ground that there is no interference in fact will not be considered unless the interference involves a design or plant patent or application or unless it relates to a count which differs from the corresponding claim of an involved patent or of one or more of the involved applications as provided in §§1.203(a) and 1.205(a).

* * * * *

21. Section 1.248 is revised to read as follows:

§1.248 Service of papers; manner of service; proof of service.

(a) Service of papers must be on the attorney or agent of the party if there be such or on the party if there is no attorney or agent, and may be made in any of the following ways:

(1) By delivering a copy of the paper to the person served;

(2) By leaving a copy at the usual place of business of the person served with someone in his employment;

(3) When the person served has no usual place of business, by leaving a copy at the person's residence, with some person of suitable age and discretion who resides there;

(4) Transmission by first class mail. When service is by mail the date of mailing will be regarded as the date of service.

(5) Whenever it shall be satisfactorily shown to the Commissioner that none of the above modes of obtaining or serving the paper is practicable, service may be by notice published in the *Official Gazette.*

(6) Papers filed in the Patent and Trademark Office which are required to be served shall contain proof of service. Proof of service may appear on or be affixed to papers filed. Proof of service shall include the date and manner of service. In the case of personal service, proof of service shall also include the name of any person served, certified by the person who made service. Proof of service may be made by (1) an acknowledgement of service by or on behalf of the person served or (2) a statement signed by the attorney or agent containing the information required by this section.

22. Section 1.291 is amended by revising the title, removing and reserving paragraph (b) and revising paragraph (c) to read as follows:

§1.291 Protests by public.

* * * * *

(b) (Reserved)

(c) Protests by the public and any accompanying papers should either (1) reflect that a copy of the same has been served upon the applicant in accordance with §1.248 or (2) be filed with the Office in duplicate in the event service is not possible.

23. Section 1.301 is revised to read as follows:

§1.301 Appeal to U.S. Court of Customs and Patent Appeals.

Any applicant or any owner of a patent involved in a reexamination proceeding dissatisfied with the decision

of the Board of Appeals, and any party to an interference dissatisfied with the decision of the Board of Patent Interferences, may appeal to the U.S. Court of Customs and Patent Appeals. The appellant must take the following steps in such an appeal: (a) In the Patent and Trademark Office give notice to the Commissioner and file the reasons of appeal (see §§1.302 and 1.304); (b) in the court, file as petition of appeal and a certified transcript of the record within a specified time after filing the reasons of appeal, and pay the fee for appeal, as provided by the rules of the court. The transcript will be transmitted to the Court by the Patent and Trademark Office on order of and at the expense of the appellant. Such order should be filed with the notice of appeal, but in no case should it be filed later than 15 days thereafter.

24. Section 1.303 is revised to read as follows:

§1.303 Civil Action under 35 U.S.C. 145,146,306.

(a) Any applicant or any owner of a patent involved in a reexamination proceeding dissatisfied with the decision of the Board of Appeals, and any party dissatisfied with the decision of the Board of Patent Interferences, may, instead of appealing to the U.S. Court of Customs and Patent Appeals (§1.301), have remedy by civil action under 35 U.S.C. 145 or 146, as appropriate. Such civil action must be commenced within the time specified in §1.304.

(b) If an applicant in an ex parte case or an owner of a patent involved in a reexamination proceeding has taken an appeal to the U.S. Court of Customs and Patent Appeals, he or she thereby waives his or her right to proceed under 35 U.S.C. 145.

(c) If a defeated party to an interference proceeding has taken an appeal to the U.S. Court of Customs and Patent Appeals, and any adverse party to the interference shall, within twenty days after the appellant shall have filed notice of the appeal to the court (§1.302), file notice with the Commissioner that he or she elects to have all further proceedings conducted as provided in 35 U.S. C. 146, certified copies of such notices will be transmitted to the U.S. Court of Customs and Patent Appeals for such action as may be necessary. The notice of election must be served as provided in §1.248.

25. A new "Subpart D—Reexamination of Patents" is added to read as follows:

Subpart D—Reexamination of Patents

Citation of Prior Art

Sec.

1.501 Citation of prior art in patent files.

Request for Reexamination

1.510 Request for reexamination.

1.515 Determination of the request for reexamination.

1.520 Reexamination at the initiative of the Commissioner.

Reexamination

1.525 Order to reexamine.

1.530 Statement and amendment by patent owner.

1.535 Reply by requester.

1.540 Consideration of responses.

1.550 Conduct of reexamination proceedings.

1.552 Scope of reexamination in reexamination proceedings.

1.555 Duty of disclosure in reexamination proceedings.

1.560 Interviews in reexamination proceedings.

1.565 Concurrent Office proceedings.

Certificate

1.570 Issuance of reexamination certificate after reexamination proceedings.

Subpart D—Reexamination of Patents

Citation of Prior Art

§1.501 Citation of prior art in patent files.

(a) At any time during the period of enforceability of a patent, any person may cite to the Patent and Trademark Office in writing prior art consisting of patents or printed publications which that person states to be pertinent and applicable to the patent and believes to have a bearing on the patentability of any claim of a particular patent. If the citation is made by the patent owner, the explanation of pertinency and applicability may include an explanation of how the claims differ from the prior art. Citations by the patent owner under §1.555 and by a reexamination requester under either §1.510 or §1.535 will be entered in the patent file during a reexamination proceeding. The entry in the patent file of citations submitted after the date of an order to reexamine pursuant to §1.525 by persons other than the patent owner, or a reexamination requester under either §1.510 or §1.535, will be delayed until the reexamination proceedings have been terminated.

(b) If the person making the citation wishes his or her identity to be excluded from the patent file and kept confidential, the citation papers must be submitted without any identification of the person making the submission.

(c) Citation of patents or printed publications by the public in patent files should either (1) reflect that a copy of the same has been mailed to the patent owner at the address as provided for in §1.33(c); or in the event service is not possible (2) be filed with the Office in duplicate.

Request for Reexamination

§1.510 Request for reexamination.

(a) Any person may, at any time during the period of enforceability of a patent, file a request for reexamination by the Patent and Trademark Office of any claim of the patent on the basis of prior art patents or printed publications cited under §1.501. The request must be accompanied by the fee for requesting reexamination set in §1.21(x).

(b) Any request for reexamination must include the following parts:

(1) a statement pointing out each substantial new question of patentability based on prior patents and printed publications.

(2) An identification of every claim for which reexamination is requested, and a detailed explanation of the pertinency and manner of applying the cited prior art to every claim for which reexamination is requested. If appropriate the party requesting reexamination may also point out how claims distinguish over cited prior art.

(3) A copy of every patent or printed publication relied upon or referred to in paragraph (b) (1) and (2) of this section accompanied by an English language translation of all the necessary and pertinent parts of any non-English language patent or printed publication.

(4) The entire specification (including claims) and drawings of the patent for which reexamination is requested must be furnished in the form of cut-up copies of the original patent with only a single column of the printed patent securely mounted or reproduced in permanent form on one side of a separate paper. A copy of any dislcaimer, certificate of correction, or reexamination certificate issued in the patent must also be included.

(5) A certification that a copy of the request filed by a person other than the patent owner has been served in its entirety on the patent owner at the address as provided for in §1.33(c). The name and address of the party served must be indicated. If service was not possible, a duplicate copy must be supplied to the Office.

(c) If the request does not include the fee for requesting reexamination or all of the parts required by paragraph (b) of this section, the person identified as requesting reexamination will be so notified and given an opportunity to complete the request within a specified time. If the fee for requesting reexamination has been paid but the defect in the request is not corrected within the specified time, the determination whether or not to institute reexamination will be made on the request as it

then exists. If the fee for requesting reexamination has not been paid, no determination will be made and the request will be placed in the patent file as a citation if it complies with the requirements of §1.501(a).

(d) The filing date of the request is: (1) the date on which the request including the entire fee for requesting reexamination is received in the Patent and Trademark Office; or (2) the date on which the last portion of the fee for requesting reexamination is received.

(e) A request filed by the patent owner, may include a proposed amendment in accordance with §1.121(f).

(f) If a request is filed by an attorney or agent identifying another party on whose behalf the request is being filed, the attorney or agent must have a power of attorney from that party or be acting in a representative capacity pursuant to §1.34(a).

§1.515 Determination of the request for reexamination.

(a) Within three months following the filing date of a request for reexamination, an examiner will consider the request and determine whether or not a substantial new question of patentability affecting any claim of the patent is raised by the request and the prior art cited therein, with or without consideration of other patents or printed publications. The examiner's determination will be based on the claims in effect at the time of the determination and will become a part of the official file of the patent and will be given or mailed to the patent owner at the address as provided for in §1.33(c) and to the person requesting reexamination.

(b) Where no substantial new question of patentability has been found, a refund of a portion of the fee for requesting reexamination will be made to the requester in accordance with §1.26(c).

(c) The requester may seek review by a petition to the Commissioner under §1.181 within one month of the mailing date of the examiner's determination refusing reexamination. Any such petition must comply with §1.181(b). If no petition is timely filed or if the decision on petition affirms that no substantial new question of patentability has been raised, the determination shall be final and nonappealable.

§1.520 Reexamination at the initiative of the Commissioner.

The Commissioner, at any time during the period of enforceability of a patent, may determine whether or not a substantial new question of patentability is raised by patents or printed publications which have been discovered by the Commissioner or which have been brought to the Commissioner's attention even though no request for reexamination has been filed in accordance with §1.510. The Commissioner may initiate reexamination without a request for reexamination pursuant to §1.510. Normally requests from outside the Patent and Trademark Office that the Commissioner undertake reexamination on his own initiative will not be considered. Any determination to initiate reexamination under this section will become a part of the official file of the patent and will be given or mailed to the patent owner at the address as provided for in §1.33(c).

Reexamination

§1.525 Order to reexamine.

(a) If a substantial new question of patentability is found pursuant to §§1.515 or 1.520, the determination will include an order for reexamination of the patent for resolution of the question. If the order for reexamination resulted from a petition pursuant to §1.515(c), the reexamination will ordinarily be conducted by an examiner other than the examiner responsible for the initial determination under §1.515(a).

(b) If the order for reexamination of the patent mailed to the patent owner at the address as provided for in §1.33(c) is returned to the Office undelivered, the notice published in the *Official Gazette* under §1.11(c) will be considered to be constructive notice and reexamination will proceed.

§1.530 Statement and amendment by patent owner.

(a) Except as provided in §1.510(e), no statement or other response by the patent owner shall be filed prior to the determinations made in accordance with §§1.515 or 1.520. If a premature statement or other response is filed by the patent owner it will not be acknowledged or considered in making the determination.

(b) The order for reexamination will set a period of not less than two months from the date of the order within which the patent owner may file a statement on the new question of patentability including any proposed amendments the patent owner wishes to make.

(c) Any statement filed by the patent owner shall clearly point out why the subject matter as claimed is not anticipated or rendered obvious by the prior art patents or printed publications, either alone or in any reasonable combinations. Any statement filed must be served upon the reexamination requester in accordance with §1.248.

(d) Any proposed amendments to the description and claims must be made in accordance with §1.21(f). No amendment may enlarge the scope of the claims of the patent or introduce new matter. No amended or new claims may be proposed for entry in an expired patent. Moreover, no amended or new claims will be incorporated into the patent by certificate issued after the expiration of the patent.

(e) Although the Office actions will treat proposed amendments as though they have been entered, the proposed amendments will not be effective until the reexamination certificate is issued.

§1.535 Reply by requester.

A reply to the patent owner's statement under §1.530 may be filed by the reexamination requester within two months from the date of service of the patent owner's statement. Any reply by the requester must be served upon the patent owner in accordance with §1.248. If the patent owner does not file a statement under §1.530, no reply or other submission from the reexamination requester will be considered.

§1.540 Consideration of responses.

The failure to timely file or serve the documents set forth in §1.530 or in §1.535 may result in their being refused consideration. No submissions other than the statement pursuant to §1.530 and the reply by the requester pursuant to §1.535 will be considered prior to examination.

§1.550 Conduct of reexamination proceedings.

(a) All reexamination proceedings, including any appeals to the Board of Appeals, will be conducted with special dispatch within the Office. After issuance of the reexamination order and expiration of the time for submitting any responses thereto, the examination will be conducted in accordance with §§1.104–1.119 and will result in the issuance of a reexamination certificate under §1.570.

(b) The patent owner will be given at least 30 days to respond to any Office action. Such response may include further statements in response to any rejections and/or proposed amendments or new claims to place the patent in a condition where all the claims, if amended as proposed, would be patentable.

(c) The time for reply set in paragraph (b) of this section will be extended only for sufficient cause, and for a reasonable time specified. Any request for such extension must be filed on or before the day on which action by the patent owner is due, but in no case will the mere filing of the request effect any extension.

(d) If the patent owner fails to file a timely and appropriate response to any Office action, the reexamination proceeding will be terminated and the Commissioner will proceed to issue a certificate under §1.570 in accordance with the last action of the Office.

(e) The reexamination requester will be sent copies of Office actions issued during the reexamination proceeding. Any document filed by the patent owner must be served on the requester in the manner provided in § 1.248. The document must reflect service or the document may be refused consideration by the Office. The

active participation of the reexamination requester ends with the reply pursuant to §1.535, and no further submissions on behalf of the reexamination requester will be acknowledged or considered. Further, no submissions on behalf of any third parties will be acknowledged or considered unless such submissions are (1) in accordance with §1.510 or (2) entered in the patent file prior to the date of the order to reexamine pursuant to §1.525. Submissions by third parties, filed after the date of the order to reexamine the pursuant to §1.525, must meet the requirements of and will be treated in accordance with § 1.501(a).

§1.552 Scope of reexamination in reexamination proceedings.

(a) Patent claims will be reexamined on the basis of patents or printed publications.

(b) Amended or new claims presented during a reexamination proceeding must not enlarge the scope of the claims of the patent and will be examined on the basis of patents or printed publications and also for compliance with the requirements of 35 U.S.C. 112 and the new matter prohibition of 35 U.S.C. 132.

(c) Questions other than those indicated in paragraphs (a) and (b) of this section will not be resolved in a reexamination proceeding. If such questions are discovered during a reexamination proceeding, the existence of such questions will be noted by the examiner in an Office action, in which case the patent owner may desire to consider the advisability of filing a reissue application to have such questions considered and resolved.

§1.555 Duty of disclosure in reexamination proceedings.

The owner of a patent involved in a reexamination proceeding who is aware, or becomes aware, of patents or printed publications material to the reexamination which have not been previously made of record in the patent file must bring such patents or printed publications to the attention of the Office. A prior art statement, preferably in accordance with §1.98, should be filed within two months of the date of the order for reexamination, or as soon thereafter as possible in order to bring such patents or printed publicatons to the attention of the Office.

§1.560 Interviews in reexamination proceedings.

(a) Interviews in reexamination proceedings pending before the Office between examiners and the owners of such patents or their attorneys or agents of record must be had in the Office at such times, within Office hours, as the respective examiners may designate. Interviews will not be permitted at any other time or place without the authority of the Commissioner. Interviews for the discussion of the patentability of claims in patents involved in reexamination proceedings will not be had prior to the first official action thereon. Interviews should be arranged for in advance. Requests that reexamination requesters participate in interviews with examiners will not be granted.

(b) In every instance of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the patent owner. An interview does not remove the necessity for response to Office actions as specified in §1.111.

§1.565 Concurrent office proceedings.

(a) In any reexamination proceeding before the Office, the patent owner shall call the attention of the Office to any prior or concurrent proceedings in which the patent is or was involved such as interferences, reissue, reexaminations, or litigation and the results of such proceedings.

(b) If a patent in the process of reexamination is or becomes involved in interference proceedings or a reissue application is filed for the patent, or litigation is instituted, the Commissioner shall determine whether or not to stay the reexamination, reissue or interference proceeding. If reexamination is stayed for the conduct of a reissue proceeding, the reissue proceeding shall take into account prior art provided by the requester for reexamination and the reexamination requester will be granted at least the same degree of participation in the reissue proceeding which the requester would have had in the reexamination proceeding. Any reexamination proceeding stayed for the conduct of a reissue proceeding shall be terminated by the grant of the reissued patent.

(c) If reexamination is ordered while a prior reexamination proceeding is pending, the reexamination proceedings will be consolidated and result in the issuance of a single certificate under §1.570.

Certificate

§1.570 Issuance of reexamination certificate after reexamination proceedings.

(a) Upon the conclusion of reexamination proceedings, the Commissioner will issue a certificate in accordance with 35 U.S.C. 307 setting forth the results of the reexamination proceeding and the content of the patent following the reexamination proceeding.

(b) A certificate will be issued in each patent in which a reexamination proceeding has been ordered under §1.525. Any statutory disclaimer filed by the patent owner will be made part of the certificate.

(c) The certificate will be mailed on the day of its date to the patent owner at the address as provided for in §1.33(c). A copy of the certificate will also be mailed to the requester of the reexamination proceeding.

(d) If a certificate has been issued which cancels all of the claims of the patent, no further Office proceedings will be conducted with regard to that patent or any reissue applications or reexamination requests relating thereto.

(e) If the reexamination proceeding is terminated by the grant of a reissued patent as provided in §1.565(b), the reissued patent will constitute the reexamination certificate required by this section and 35 U.S.C. 307.

(f) A notice of the issuance of each certificate under this section will be published in the *Official Gazette* on its date of issuance.

RENE D. TEGTMEYER,
May 12, 1981. *Acting Commissioner of Patents and Trademarks.*

ROBERT B. ELLERT,
May 15, 1981. *Acting Assistant Secretary for Productivity, Technology, and Innovation.*

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[1007 O.G. 30]

DEPARTMENT OF COMMERCE

(88) **Patent and Trademark Office**

37 CFR Part 1

Rules of Practice in Patent Cases; Fee for Filing a Request for Reexamination

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Final rule.

Summary: The Patent and Trademark Office is amending its rules of practice in patent cases to add a new fee for the filing of a request for reexamination of a patent and to provide for a refund if the request is denied. Public Law 96-517 of Dec. 12, 1980 authorizes reexamination beginning on July 1, 1981. Public Law 96-517 requires a person requesting reexamination to pay a fee established by the Commissioner of Patents and Trademarks. This amendment establishes the fee for filing a request for reexamination and the amount of any refund if the request is denied.

Dates: Effective date: July 1, 1981.

For Further Information Contact: Mr. R. Franklin Burnett by telephone at (703) 557-3054 or by mail marked to his attention and addressed to the Commissioner of Pa-

tents and Trademarks, Washington, D.C. 20231.

Supplementary Information: This notice changes two rules to add an appropriate fee for requesting reexamination and to refund a portion thereof if reexamination is not ordered. 35 U.S.C. 41(g) requires 60 days notice in the *Federal Register* before a fee can take effect. 35 U.S.C. 41(d) requires that the Commissioner establish fees for services, such as reexamination, which will recover the estimated average cost to the Office of performing the service.

Background:

A notice of proposed rulemaking relating to the fee, and refund, as well as the procedures for reexamination, was published in the *Federal Register* on Jan. 13, 1981 at 46 FR 3162-3174 and in the Official Gazette on Feb. 17, 1981 at 1003 O.G. 36-47. An oral hearing was held on Apr. 16, 1981. This amendment relates only to section 1.21 on fees and section 1.26 on refunds. It is being issued separately to meet the 60-day notice requirement of 35 U.S.C. 41(g). The reexamination procedures will be the subject of a later amendment. There is no difference in the amount of the fee or refund between the final rule and the proposal.

Discussion of the Background and Major Issues Involved: Two written comments and one oral comment relating to proposed section 1.21(x) indicated that the fee of $1500 seemed excessive. One comment indicated that it should be $65, the amount of the current filing fee for a United States patent application. Several oral comments indicated the amount of the fee was appropriate. In response, it is not considered possible to charge only $65 for a reexamination because 35 U.S.C. 41(d) requires the Commissioner to set the fee for reexamination at a level which will recover the estimated average cost to the Office. The estimated average cost reported to the Congress, and still considered proper, is $1500 per reexamination.

Two written comments and one oral comment referred to proposed section 1.26(c). One written comment proposed the use of a percentage rather than a dollar amount in the rule wording. In response, it is felt that the wording using the actual dollar amount is clearer. Since the amount of the fee is expected to be changed infrequently, changing section 1.26 to follow a change in §1.21 would not be burdensome. One written comment and one oral comment indicated that a fixed fee should be set without any refund in order to simplify processing. Although a fixed fee system would be less complicated, it is felt that persons who have not received a reexamination in response to their request should not be required to pay the same amount as those who had the reexamination requested. No comments were received concerning the amendments to paragraphs (a) and (b) of section 1.26 which reorganize some of the wording and raise the minimum refund without specific demand from ten cents to fifty cents.

Environmental, Energy, and Other Considerations.

The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96-354).

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291.

Amendment of Regulations

For the reasons set out in the preamble and under the authority given to the Commissioner of Patents and Trademarks by 35 U.S.C. 6 and 41, Part 1 of Title 37 CFR is amended as set forth below.

1. Section 1.21 is amended by adding a new paragraph (x) to read as follows:

§1.21 Patent and miscellaneous fees and charges

* * * * *

(x) To file a request for reexamination—$1,500.00

2. Section 1.26 is revised to read as follows:

§1.26 Refunds.

(a) Money paid by actual mistake or in excess, such as a payment not required by law, will be refunded, but a mere change of purpose after the payment of money, as when a party desires to withdraw his application or to withdraw an appeal, will not entitle a party to demand such a return. Amounts of fifty cents or less will not be returned unless specifically demanded within a reasonable time, nor will the payer be notified of such amount; amounts over fifty cents but less than one dollar may be returned in postage stamps, and other amounts by check or, if requested, by credit to a deposit account.

(b) Refund of a portion of any international search fee paid to the Patent and Trademark Office may be made where the prior art search made during the subsequent examination of a national application is wholly or partly based on the earlier international search made in the international application for which the search fee was paid. The amount of the refund will be as determined by the examiner according to the value of the prior international search made by the Patent and Trademark Office as an International Searching Authority, as 90 percent, 45 percent, or 0 percent of the international search fee. If the amount of the refund is not a multiple of $5, it will be rounded to the next higher multiple of $5. (Note §1.446 for refund of the search fee in an international application.)

(c) If the Commissioner decides not to institute a reexamination proceeding, a refund of $1,200.00 will be made to the requestor of the proceeding. Reexamination requestors should indicate whether any refund should be made by check or credit to a deposit account.

RENE D. TEGTMEYER,
Apr. 17, 1981. *Acting Commissioner of Patents and Trademarks.*

Approved:

ROBERT B. ELLERT,
Apr. 20, 1981. *Acting Assistant Secretary for Productivity, Technology and Innovation.*

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[1007 O.G. 2]

DEPARTMENT OF COMMERCE

(89) **Patent and Trademark Office**

37 CFR Part 1

Reissue, Reexamination, Protest and Examination Procedures in Patent Cases

Agency: Patent and Trademark Office, Commerce.

Action: Notice of proposed rulemaking.

Summary: The Patent and Trademark Office proposes to amend the rules of practice in patent cases (1) to eliminate public access to reissue applications, (2) to eliminate consideration of the so-called "no defect" reissue applications, (3) to limit the participation by protestors during the application examination, (4) to reject and permit appeal to the Board of Appeals for failure to comply with the duty of disclosure rather than striking applications without appeal rights, and (5) to clarify the interface between patent application examination and patent reexamination in certain areas. These proposed changes are considered desirable in view of the large backlog of pending patent applications and the implementation of reexamination procedures under Public Law 96–517. These changes are intended to (1) reduce the prosecution costs of patent applicants, and (2) permit some of the Patent and Trademark Office resources now devoted to consideration of the so-called "no defect" reissue applications, and to extensive participation by protestors during application examination, to be directed toward reduction of the backlog of pending patent applications. The proposed changes are also intended to provide for review by the Board of Appeals of duty of disclosure is-

sues which arise during patent application examination. The proposed changes are further intended to clarify the interface between the duty of disclosure during patent application examination and the duty of disclosure during patent reexamination, as well as the treatment of concurrent reissue and reexamination proceedings on the same patent.

Dates: Comments must be submitted on or before Feb. 4, 1982; public hearing, Feb. 4, 1982, 9:30 a.m.; requests to present oral testimony should be received on or before January 29, 1982.

Addresses: Address written comments and requests to present oral testimony to the Commissioner of Patents and Trademarks, Washington, D.C. 20231. The hearing will be held in Room 11C24 of Bldg. 3, Crystal Plz., located at 2021 Jefferson Davis Hwy., Arlington, Va. Written comments and a transcript of the public hearing will be available for public inspection in Room 11E10 of Bldg. 3, Crystal Plz. at 2021 Jefferson Davis Hwy., Arlington, Va.

For Further Information Contact: Mr. R. Franklin Burnett by telephone at (703) 557–3054 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information: This proposed rule change is designed to reduce the prosecution costs of patent applicants by limiting the amount of participation by protestors during the patent application examination process. The proposed change also seeks to reduce the amount of time required by the Patent and Trademark Office to examine such protested applications by the same limitations placed on protestor participation. Interpartes proceedings to resolve factual disputes would be left to the courts to handle. At the same time, the technical expertise of the Patent and Trademark Office would continue to be available to make determinations of patentability on the basis of prior art and related facts as they can best be determined on an ex parte basis. These purposes are intended to be accomplished by (1) eliminating public access to reissue applications, and (2) limiting protestor participation to the filing of papers in opposition to the grant of a patent with no Office communications to the protestor resulting therefrom. The proposed change also intends to accomplish these purposes by eliminating the consideration of reissue applications not initially containing the defects required by 35 U.S.C. 251. The views of many who commented in writing and at the hearing on April 16, 1981, on proposed rules for implementing reexamination favored modifications of the rules along the lines proposed herein. The reexamination legislation, contained in Pub. L. 96–517, provides for the reexamination of an already issued patent on the basis of prior patents and printed publications, prior art which can be readily and adequately considered by the examiner.

This proposed rule change is also designed to provide for review by the Board of Appeals of duty of disclosure issues which arise during patent application examination. This purpose is intended to be accomplished by amending §1.56(d) to provide that the claims in an application would be examined pursuant to 35 U.S.C. 131 and 132 and rejected on the ground that applicant is not "entitled to a patent under the law." The rejection would be made under the same conditions and circumstances previously used to strike an application, i.e., "clear and convincing evidence" of fraud or any violation of the duty of disclosure through bad faith or gross negligence. The statute, 35 U.S.C. 131, provides for examination of an application "and if on such examination it appears that the applicant is entitled to a patent under the law, the Commissioner shall issue a patent * * *." Section 132 of Title 35 makes provision for the rejection of a claim for a patent as a result of the examination directed by 35 U.S.C. 131. While questions of fraud and violations of the duty of disclosure have historically been dealt with by the Commissioner through the mechanism of striking the affected application, there is no statutory requirement that the Commissioner act in that manner. Clearly the Commissioner can choose how, and by whom, the examination directed by 35 U.S.C. 131 can be made. Section 132 authorizes a rejection in those circumstances where applicant is not "entitled to a patent under the law." The proposed changes would simply modify the mechanism and procedures which the Commissioner would use where the applicant is not "entitled to a patent under the law" because of failures to comply with § 1.56(d).

No proposal is being made to change the discretionary authority of the Commissioner to strike applications from the file pursuant to §1.56(c). Since the striking of applications under paragraph (c) of §1.56 is discretionary, it is appropriate that the authority be retained by the Commissioner or the Commissioner's delegate.

The proposed rule change is also designed to clarify the interface between patent application examination and patent reexamination in certain areas. The two areas involved are duty of disclosure and concurrent proceedings involving a patent under reexamination and for which a reissue application has been filed.

Present §§1.11, 1.56, 1.106, 1.175, 1.176, 1.193, 1.291, 1.555, 1.565, and 1.570 would be amended to accomplish the purposes indicated above.

Section 1.11, if amended as proposed, would eliminate access by the public to reissue applications except "in such special circumstances as may be determined by the Commissioner" as provided in 35 U.S.C. 122. This section, if amended as proposed, would mean that access by the public to reissue applications would be obtained only by the granting of a petition under essentially the same guidelines as those which existed prior to the change in §1.11 which became effective on March 1, 1977. Section 1.11, if amended as proposed, would no longer provide for announcement of the filing of reissue applications in the Official Gazette. However, no change is being proposed in §1.179 which requires placing in the file of the original patent a notice stating that an application for reissue has been filed. The notice provided for in §1.179 will continue to enable interested persons to determine whether or not an application seeking reissue of a particular patent has been filed.

Section 1.56, if amended as proposed, would revise the title and paragraph (d), and add new paragraphs (e) through (i). The proposed revision to the title and to paragraph (d) would provide for the rejection of claims on the ground that applicant is not entitled to a patent under the law if upon examination pursuant to 35 U.S.C. 131 and 132 it is established by clear and convincing evidence (1) that any fraud was practiced or attempted on the Office in connection with the application, or in connection with any previous application upon which the application relies, or (2) that there was any violation of the duty of disclosure through bad faith or gross negligence in connection with the application, or in connection with any previous application upon which the application relies. Under the proposed revision to paragraph (d), any rejection which would be made would include all the claims in the application. The standards to be used in rejecting the claims under paragraph (d), as proposed to be amended, would be the same as those now utilized by the Commissioner in striking applications pursuant to present paragraph (d), i.e., clear and convincing evidence of fraud or any violation of the duty of disclosure through bad faith or gross negligence. Consistent with present practice, the proposed revision of paragraph (d) would look to fraud or a violation of the duty of disclosure through bad faith or gross negligence with relation to the application under consideration or any previous application upon which the application relies. The phrase "in connection with the application" is to be construed in the same manner as in the present paragraph (d) and would include within its scope the mere refiling of the subject matter of an application into another application without relying in the second application upon the first application. Thus, upon examination pursuant to 35 U.S.C. 131 and 132, an appropriate rejection based on conduct or actions proscribed by §1.56(d) could not be avoided merely by refiling the subject matter of the application in a second or subsequent application which did not rely upon the earlier application.

Paragraph (e) of §1.56, if added as proposed, would normally delay the examination of an application for compliance with paragraph (d) of §1.56 until such time as (1) all other matters are resolved, or (2) appellant's reply brief pursuant to §1.193(b) has been received and the application is otherwise prepared for consideration by the Board of Appeals, at which time the appeal will be suspended for examination pursuant to paragraph (d) of this section. Paragraph (e), if added as proposed, would thus permit the resolution of issues arising under §1.56(d) to be delayed until consideration of such issues is necessary and appropriate. The practice under proposed paragraph (e) would be generally consistent with practice under present paragraph (d) which normally delays the substantive resolution of fraud and duty of disclosure issues until other issues have been resolved in favor of applicant. Under proposed paragraph (e) an appeal would be suspended for examination pursuant to paragraph (d) of §1.56 once appellant's reply brief pursuant to §1.193(b) has been received and the application is otherwise prepared for consideration by the Board of Appeals. Of course, if no questions of possible violation of §1.56 are raised or evident on the record before the examiner, no examination for compliance with paragraph (d) of §1.56 would be undertaken. Proposed paragraph (e) provides for the reopening of prosecution of the application to the extent necessary to conduct the examination pursuant to proposed paragraph (d) of §1.56 including any appeal pursuant to §1.191. Proposed paragraph (e) also indicates that where an appeal has already been filed based on a rejection on other grounds, any further rejection under paragraph (d), if amended as proposed, shall be treated in accordance with proposed §1.193(c).

Proposed new paragraph (f) would continue the present long-standing practice whereby any member of the public can file a petition to strike an application from the files pursuant to present paragraph (c) of §1.56. Such petitions are currently being filed without specific mention in §1.56. Under present practice such petitions can seek to have an application stricken from the files for violations of either or both of paragraphs (c) and (d) of §1.56. Under the proposed revision of §1.56 petitions to strike an application for a violation of §1.56 would be limited to violations of paragraph (c) with any violations of paragraph (d) being subject matter for rejection under the proposed revisions to paragraph (d). Proposed new paragraph (f) would require that any such petition alleging a violation of paragraph (c) which is entered in the application file would have to (1) be timely filed, (2) specifically identify the application to which the petition is directed, and (3) be served on the applicant or be filed with the Office in duplicate in the event service is not possible. Proposed new paragraph (f) does not specifically limit a "timely petition" to any particular point in the examination of the application. Such petitions will generally be considered "timely" if they are filed before final rejection or allowance of the application by the examiner.

Whether or not a petition filed after final rejection or allowance of the application by the examiner is considered "timely" would depend upon the circumstances and the point in the prosecution at which the petition is submitted. Proposed new paragraph (f) would also require that the petition specifically identify the application to which the petition is directed. While an identification by application serial number is not essential, the identification must include enough specificity that the Office can determine with certainty the application to which the petition is directed. Paragraph (f), if added as proposed, would also require service on the applicant of the petition, or a duplicate copy in the event service is not possible, before the petition would be entered. While the Office might, in some circumstances, reproduce and serve a petition on the applicant, a member of the public would have no assurance that such would be done and, under proposed paragraph (f), could not rely upon the Office doing so. Paragraph (f), if added as proposed, would require that any petition filed by an attorney or agent comply with §1.346.

Paragraph (g) of §1.56, if added as proposed, would assure a member of the public that a petition to strike an application for violation of paragraph (c) of §1.56 would be considered by the Office if (1) it is timely filed; (2) it specifically identifies the application to which the petition is directed; and (3) it is properly served upon the applicant in accordance with §1.248 or is filed with the Office in duplicate in the event service is not possible. However, under proposed paragraph (g) the Office would not communicate with the member of the public filing such a petition, except for the return of a self-addressed postcard acknowledging receipt of the petition. Paragraph (g), if added as proposed, would not permit the member of the public filing the petition to contact the Office as to the disposition, or status, of the petition, or to participate in any Office proceedings relating to the petition. The disposition of the petition, once such has been filed, would, under the proposed paragraph (g), be an ex parte matter between the Office and the applicant. Paragraph (g), if added as proposed, would provide for the Office to communicate with the applicant regarding a petition to strike the application which has been entered in the application file. Under paragraph (g), if added as proposed, the applicant could be required by the Office to respond to the petition. Any such response would be ex parte and would not be served on the member of the public filing the petition.

Paragraph (h) of §1.56, if added as proposed, would provide that any member of the public may seek to have the claims in an application rejected pursuant to the proposed revisions to paragraph (d) of §1.56 by filing a timely protest in accordance with §1.291. Proposed paragraph (h) also requires that any such protest filed by an attorney or agent seeking a rejection of claims pursuant to the proposed revisions to paragraph (d) of §1.56 must be in compliance with §1.346.

Paragraph (i), if added as proposed, would provide for the Office requiring the applicant to supply information pursuant to paragraph (a) of §1.56 in order for the Office to decide any issues relating to paragraphs (c) and (d) of §1.56, whether or not such issues arise as a result of a petition or a protest, or arise from other sources, e.g., an examiner discovering the issue while studying the application file. Any requirements for information under proposed paragraph (i) would be ex parte in nature between the Office and the applicant. The ex parte nature of the requirements for information under proposed paragraph (i) differs from current practice under which information may be required, or requested, from applicant and one or more petitioners or protestors.

Section 1.106, if amended as proposed, would have added thereto a paragraph (c) emphasizing the importance placed on admissions by the applicant or patent owner in a reexamination proceeding insofar as matters affecting patentability are concerned. Such admissions would have increased importance in view of the limitations proposed herein on protestor participation during the application examination. Paragraph (c), if added as proposed, would also include a reference to the use of rejections based upon facts within the knowledge of the examiner as provided in present §1.107. Paragraph (c), if added as proposed, would not constitute a change in practice, but would result in §1.106 more closely reflecting current practice.

Section 1.175, if amended as proposed, would eliminate paragraph (a)(4), which provides the specific authorization for the filing of "no defect" reissue applications. If §1.175 is amended as proposed, an applicant for reissue of a patent would be required to file with the reissue application a statement under oath or declaration specifically averring to a defect in the patent, e.g., "a defective specification or drawing," or to an excess or insufficiency in the claims. Section 1.175, if amended as proposed, would also require, in paragraphs (a)(5) and (a)(6), that applicant specify errors as opposed to "what might be deemed to be errors." Section 1.175, if amended as proposed, would effectively eliminate Office consideration of the merits of "no defect" reissue applications since any such "no defect" reissue applications filed after the effective date of the changes to §1.175 would not be ex-

amined as to questions of patentability. In addition, § 1.175(a)(6) would be added to parallel the provisions presently in §1.65 requiring in reissue applications oaths or declarations, the same acknowledgment of the duty of disclosure as in the case of a non-reissue application.

Section 1.176, if amended as proposed, would eliminate the two month waiting period before examination of the reissue application begins. No waiting period would be necessary or desirable if the proposed amendments to §1.11(b) eliminating public access to reissue applications and the *Official Gazette* announcement of the filing of the reissue applications are adopted.

Section 1.193, if amended as proposed, by adding paragraph (c), would provide that any decision pursuant to §1.56(d) rejecting claims in an application already under appeal of a rejection based on other grounds shall constitute a supplemental examiner's answer introducing a new ground of rejection and removing the suspension of the appeal introduced pursuant to §1.56(e). Prior to entering any such supplemental examiner's answer under proposed paragraph (c), the Office may require information from applicant pursuant to proposed paragraph (i) of §1.56. Under proposed paragraph (c) of §1.193, the appellant may file a reply to the supplemental examiner's answer within two months from the date of the supplemental examiner's answer. Proposed paragraph (c) provides that the appellant's reply to the supplemental examiner's answer will be considered and responded to as necessary with appellant being provided with an additional month, or such other time as may be set, within which to reply to any such response from the Office. Following the introduction of a supplemental examiner's answer pursuant to proposed paragraph (c) and any replies and response thereto, the application will be forwarded to the Board of Appeals for consideration.

Section 1.291, if amended as proposed, would continue to permit protests by the public against pending original and reissue applications. The protest could include any grounds which the member of the public filing the protest believed to be applicable. Paragraph (a), if amended as proposed, would eliminate the present requirement that the Office acknowledge the filing of a protest. Instead, proposed paragraph (c) would provide for the member of the public submitting the protest to include with the protest a self-addressed postcard in order to receive an acknowledgment that the protest has been received. Under paragraph (c), as proposed to be amended, a self-addressed postcard containing an identification of the protest would be stamped by the Office and returned.

Paragraph (a) of §1.291, if amended as proposed, would provide that a protest specifically identifying the application to which the protest is directed would be entered in the application file if the protest is timely submitted and is either served upon the applicant in accordance with §1.248, or filed with the Office in duplicate in the event service is not possible. The comments made above in the discussion of proposed new paragraph (f) of §1.56, regarding the timeliness of the filing or submission, specific identification of the application, and service on the applicant, are also applicable to the proposed amendments of paragraph (a) of §1.291.

Paragraph (b) of §1.291, if added as proposed, would assure a member of the public that a protest would be considered by the Office if (1) it specifically identifies the application to which it is directed; (2) it is timely submitted; (3) it is properly served upon the applicant in accordance with §1.248 or is filed with the Office in duplicate in the event service is not possible; (4) it includes a listing of the patents, publications or other information relied upon and a concise explanation of the relevance of each listed item; (5) it includes a copy of each listed patent or publication or other item of information in written form, or at least the pertinent portions thereof; and (6) it includes an English language translation of all the necessary and pertinent parts of any non-English language document relied upon. It is considered desirable that §1.291 advise a member of the public as to the contents which should be included in any protest since there would be no office communications directed to the member of the public submitting the protest, if paragraph (c) is amended as proposed. Thus, under paragraph (c), as proposed to be amended, a member of the public would not be provided with an opportunity to complete any protest which is incomplete.

Paragraph (c) of §1.291, if amended as proposed, would provide that the member of the public filing the protest would not receive any communications from the Office relating to the protest, other than the return of a self-addressed postcard acknowledging receipt of the protest. Paragraph (c) of §1.291, if amended as proposed, would not permit the member of the public filing the protest to contact the Office as to the disposition, or status, of the protest or to participate in any Office proceedings relating to the protest. The disposition of the protest, once such has been filed, would, under paragraph (c) as proposed to be amended, be an ex parte matter between the Office and the applicant. Paragraph (c), if amended as proposed, would provide for the Office to communicate with the applicant regarding any protest entered in the application file. Under paragraph (c), if amended as proposed, the applicant could be required by the Office to respond to the protest. Any such response would be ex parte and would not be served on the member of the public filing the protest. Paragraph (c), if amended as proposed, would provide for the Office requiring the applicant to supply information pursuant to present paragraph (a) of §1.56 in order for the Office to decide any issues raised by the protest. Any requirements for information under paragraph (c), if amended as proposed, would be ex parte in nature between the Office and the applicant. The ex parte nature of the requirements for information under paragraph (c), if amended as proposed, differs from current practice under which information may be required, or requested, from applicant and one or more protestors.

Section 1.555, if amended as proposed, would make the duty of disclosure in reexamination proceedings more consistent with the duty of disclosure in patent applications. Proposed paragraph (a) of §1.555 specifies that a duty of candor and good faith toward the Patent and Trademark Office rests on the patent owner or involved employees of the patent owner, on each attorney or agent who represents the patent owner, and on every other individual who is substantively involved on behalf of the patent owner in a reexamination proceeding. This proposed change is consistent with the duty set forth in §1.56(a) insofar as patent applications are concerned, except that in proposed paragraph (a) of §1.555 the patent owner is specified rather than the inventor as set forth in paragraph (a) of §1.56. This does not however, impose the responsibility for compliance with the duty of disclosure on a corporate entity or organization but leaves the responsibility with involved individuals in the corporation or other organization. Proposed paragraph (a) of § 1.555 places a requirement on the individuals identified to bring to the attention of the Office patents or printed publications material to the reexamination which have not been previously made of record in the patent file and specifies how that should be accomplished.

Paragraph (b) of §1.555, if added as proposed, would essentially parallel existing paragraph (b) of §1.56 and make similar provisions applicable to disclosures in reexamination proceedings.

Paragraph (c) of §1.555, if added as proposed, would provide that the duties of candor, good faith, and disclosure required in proposed paragraph (a) of §1.555 have not been complied with if any fraud was practiced or attempted on the Office or there was any violation of the duty of disclosure through bad faith or gross negligence by, or on behalf of, the patent owner in the reexamination proceeding. The language of proposed paragraph (c) refers to fraud or violation of the duty of disclosure in the reexamination proceeding since such conduct during the pendency of applications is covered by §1.56.

Paragraph (d) of §1.555, if added as proposed, would affirm that the responsibility for compliance with §1.555 rests upon the individuals identified in proposed paragraph (a). Proposed paragraph (d) would also provide that no evaluation will be made in the reexamination

proceeding by the Office as to compliance with §1.555. Proposed paragraph (d) of §1.555 also provides that questions of compliance with §1.555 which are discovered during a reexamination proceeding will be noted as unresolved questions in accordance with present § 1.552(c). Proposed paragraph (d) would not preclude the patent owner from filing a reissue application to have questions of candor, good faith, and duty of disclosure considered and resolved, including such questions which arise during a reexamination proceeding so long as the requirements of 35 U.S.C. §251 have been met. Proposed paragraph (d) would also not preclude suspension or disbarment proceedings under present § 1.348 based upon conduct during a reexamination proceeding.

Section 1.565, if amended as proposed, would eliminate from present paragraph (b) the last two sentences relating to the treatment of concurrent reexamination and reissue proceedings and add a new paragraph (d) relating to this subject. Under proposed paragraph (d), which is consistent with the practice presently in effect under present paragraph (b), if a reissue application and a reexamination proceeding on which an order pursuant to present §1.525 has been mailed are pending concurrently on a patent, a decision will normally be made to merge the two proceedings or to stay one of the two proceedings. Proposed paragraph (d) provides that where merger of a reissue application and a reexamination proceeding is ordered, the merged examination will be conducted in accordance with present §§ 1.171–1.179. The examiner, in examining the merged proceeding, will apply the reissue statute and case law, in addition to present §§1.171–1.179, to the merged proceeding. This is appropriate in view of the fact that the statutory provisions for reissue applications and reissue application examination include, *inter alia,* provisions equivalent to 35 U.S.C. 305 relating to the conduct of reexamination proceedings. Proposed paragraph (d) of § 1.565 would also make clear that the patent owner must place and maintain the same claims in the reissue application and the reexamination proceeding during the pendency of the merged proceeding. Under proposed paragraph (d) of §1.565 the examiner's actions and any responses by the patent owner in a merged proceeding would apply to both the reissue application and the reexamination proceeding and be physically entered into both files. Proposed paragraph (d) provides that any reexamination proceeding merged with a reissue application shall be terminated by the grant of the reissued patent.

Section 1.570, if amended as proposed, would revise paragraph (e) to refer to proposed paragraph (d) of §1.565 rather than present paragraph (b) in order to reflect the changes being proposed in §1.565.

Environmental, energy, and other considerations: The proposed rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The proposed rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act. Pub. L. 96–354).

The Patent and Trademark Office has determined that this proposed rule change is not a major rule under Executive Order 12291.

The proposed rule change does not impose a recordkeeping or reporting requirement on the public and consequently is not subject to the Paperwork Reduction Act of 1980.

Notice is hereby given that, pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, the Patent and Trademark Office proposes to amend Title 37 of the Code of Federal Regulations as set forth below.

Part 1—Rules of Practice in Patent Cases

It is proposed to amend 37 CFR, Part 1, as follows with deletions indicated by brackets and additions by arrows:

1. Section 1.11 is proposed to be amended by revising paragraph (b) to read as follows:

§1.11 Files open to the public.

* * * * *

(b) All [reissue applications and all] applications in which the Office has accepted a request filed under §1.139, and related papers in the application file, are open to inspection by the general public, and copies may be obtained upon paying the fee therefor. [The filing of reissue applications will be announced in the Official Gazette. The announcement shall include at least the filing date, reissue application and original patent numbers, title, class and subclass, name of the inventor, name of the owner of record, name of the attorney or agent of record, and examining group to which the reissue application is assigned.]

2. Section 1.56 is proposed to be amended by revising the title and paragraph (d) and by adding new paragraphs (e) through (i) to read as follows:

§1.56 Duty of disclosure; fraud; striking or rejection of applications.

* * * * *

(d) No patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or gross negligence. The claims in an [An] application shall be rejected [stricken from the files] if upon examination pursuant to 35 U.S.C. 131 and 132, it is established by clear and convincing evidence (1) that any fraud was practiced or attempted on the Office in connection with the application, or in connection with any previous application upon which the application relies, [it] or (2) that there was any violation of the duty of disclosure through bad faith or gross negligence in connection with the application, or in connection with any previous application upon which the application relies .

(e) The examination of an application for compliance with paragraph (d) of this section will normally be delayed until such time as (1) all other matters are resolved, or (2) appellant's reply brief pursuant to §1.193(b) has been received and the application is otherwise prepared for consideration by the Board of Appeals, at which time the appeal will be suspended for examination pursuant to paragraph (d) of this section. The prosecution of the application will be reopened to the extent necessary to conduct the examination pursuant to paragraph (d) of this section including any appeal pursuant to §1.191. If an appeal has already been filed based on a rejection on other grounds, any further rejection under this section shall be treated in accordance with §1.193(c).

(f) Any member of the public may seek to have an application stricken from the files pursuant to paragraph (c) of this section by filing a timely petition to strike the application from the files. Any such timely petition and any accompanying papers will be entered in the application file if the petition and accompanying papers (1) specifically identify the application to which the petition is directed, and (2) are either served upon the applicant in accordance with §1.248, or filed with the Office in duplicate in the event service is not possible. Any such petition filed by an attorney or agent must be in compliance with §1.346.

(g) A petition to strike an application from the files submitted in accordance with the second sentence of paragraph (f) of this section will be considered by the Office, but a member of the public filing such a petition will not receive any communications from the Office relating to the petition, other than the return of a self-addressed postcard which the member of the public may include with the petition in order to receive an acknowledgment by the Office that the petition has been received. The Office will communicate with the applicant regarding any such petition entered in the application file and may require the applicant to respond to the Office on matters raised by the petition.

(h) Any member of the public may seek to have the claims in an application rejected pursuant to paragraph (d) of this section by filing a timely protest in ac-

cordance with §1.291. Any such protest filed by an attorney or agent must be in compliance with §1.3[illegible]5.

(i) The Office may require applicant to supply information pursuant to paragraph (a) of this section in order for the Office to decide any issues relating to paragraphs (c) and (d) of this section which are raised by a petition or a protest, or are otherwise discovered by the Office.

3. Section 1.106 is proposed to be amended by adding a new paragraph (c) to read as follows:

§1.106 Rejection of claims.

* * * * *

(c) In rejecting claims the examiner may rely upon admissions by the applicant, or the patent owner in a reexamination proceeding, as to any matter affecting patentability and, insofar as rejections in applications are concerned, may also rely upon facts within his or her knowledge pursuant to §1.107.

4. Section 1.175 is proposed to be amended by revising paragraph (a) to read as follows:

§1.175 Reissue oath or declaration.

(a) Applicants for reissue, in addition to complying with the requirements of the first sentence of §1.65, must also file with their applications a statement under oath or declaration as follows:

(1) When the applicant verily believes the original patent to be wholly or partly inoperative or invalid, stating such belief and the reasons why.

(2) When it is claimed that such patent is so inoperative or invalid "by reason of a defective specification or drawing," particularly specifying such defects.

(3) When it is claimed that such patent is inoperative or invalid "by reason of the patentee claiming more or less than he had a right to claim in the patent," distinctly specifying the excess or insufficiency in the claims.

[(4) When the applicant is aware of prior art or other information relevant to patentability, not previously considered by the Office, which might cause the examiner to deem the original patent wholly or partly inoperative or invalid, particularly specifying such prior art or other information and requesting that if the examiner so deems, the applicant be permitted to amend the patent and be granted a reissue patent.]

(4) [(5)] Particularly specifying the errors [or what might be deemed to be errors] relied upon, and how they arose or occurred.

(5) [(6)] Stating that said errors [, if any,] arose "without any deceptive intention" on the part of the applicant.

(6) Acknowledging a duty to disclose information applicant is aware of which is material to the examination of the application.

* * * * *

5. Section 1.176 is proposed to be revised to read as follows:

§1.176 Examination of reissue.

An original claim, if re-presented in the reissue application, is subject to reexamination, and the entire application will be examined in the same manner as original applications, subject to the rules relating thereto, excepting that division will not be required. Applications for reissue will be acted on by the examiner in advance of other applications [, but not sooner than two months after announcement of the filing of the reissue application has appeared in the Official Gazette].

6. Section 1.193 is proposed to be amended by adding a paragraph (c) to read as follows:

§1.193 Examiner's answer.

* * * * *

(c) Any decision pursuant to §1.56(d) rejecting claims in an application already under appeal of a rejection based on other grounds shall constitute a supplemental examiner's answer introducing a new ground of rejection and removing the suspension of the appeal introduced pursuant to §1.56(e), in which case appellant may file a reply thereto within two months from the date of the supplemental examiner's answer. Such reply will be considered and responded to as necessary. Appellant may file a reply brief directed to any such response within one month of the date of the response or within such other time as may be set in the response.

7. Section 1.291 is proposed to be amended by revising the title, amending paragraphs (a) and (c), and adding paragraph (b) to read as follows:

§1.291 Protests by the public against pending applications

(a) Protests by a member of the public against pending applications will be [acknowledged and] referred to the examiner having charge of the subject matter involved. A protest specifically identifying the application to which the protest is directed will be entered in the application file [and,] if (1)[illegible]considered by the examiner] ; and (2) the protest is either served upon the applicant in accordance with §1.248, or filed with the Office in duplicate in the event service is not possible

(b) A protest submitted in accordance with the second sen[illegible]ice of paragraph (a) of this section will be considered by the Office if it includes (1) a listing of the patents, publications or other information relied upon; (2) a concise explanation of the relevance of each listed item; (3) a copy of each listed patent or publication or other item of information in written form or at least the pertinent portions thereof; and (4) an English language translation of all the necessary and pertinent parts of any non-English language patent, publication, or other item of information in written form relied upon.

(c) A member of the public filing a protest under paragraph (a) of this section will not receive any communications from the Office relating to the protest, other than the return of a self-addressed postcard which the member of the public may include with the protest in order to receive an acknowledgment by the Office that the protest has been received. The Office will communicate with the applicant regarding any protest entered in the application file and may require the applicant to supply information pursuant to paragraph (a) of §1.56, including responses to specific questions raised by the protest, in order for the Office to decide any issues raised by the protest [Protests by the public and any accompanying papers should either (1) reflect that a copy of the same has been served upon the applicant in accordance with §1.248, or (2) be filed with the Office in duplicate in the event service is not possible].

8. Section 1.555 is proposed to be revised to read as follows:

§1.555 Duty of disclosure in reexamination proceedings.

(a) A duty of candor and good faith toward the Patent and Trademark Office rests on the patent owner, on each attorney or agent who represents the patent owner, and on every other individual who is substantively involved on behalf of the patent owner in a reexamination proceeding. All such individuals who are aware, or become aware [The owner of a patent involved in a reexamination proceeding who is aware, or becomes aware], of patents or printed publications material to the reexamination which have not been previously made of record in the patent file must bring such patents or printed publications to the attention of the Office. A prior art statement, preferably in accordance with §1.98, should be filed within two months of the date of the order for reexamination, or as soon thereafter as possible in order to bring such patents or printed publications to the attention of the Office.

(b) Disclosures pursuant to this section may be made to the Office through an attorney or agent having responsibility on behalf of the patent owner for the reexamination proceeding or through a patent owner acting in his or her own behalf. Disclosure to such an attorney, agent or patent owner shall satisfy the duty of any other individual. Such an attorney, agent or patent owner has no duty to transmit information which is not material to the reexamination.

(c) The duties of candor, good faith, and disclosure required in paragraph (a) of this section have not been complied with if any fraud was practiced or attempted

on the Office or there was any violation of the duty of disclosure through bad faith or gross negligence by, or on behalf of, the patent owner in the reexamination proceeding.

(d) The responsibility for compliance with this section rests upon the individuals identified in paragraph (a) of this section and no evaluation will be made in the reexamination proceeding by the Office as to compliance with this section. If questions of compliance with this section are discovered during a reexamination proceeding, they will be noted as unresolved questions in accordance with §1.552(c).

9. Section 1.565 is proposed to be amended by revising paragraph (b) and adding paragraph (d) to read as follows:

§1.565 Concurrent office proceedings.

* * * * *

(b) If a patent in the process of reexamination is or becomes involved in interference proceedings or a reissue application is filed for the patent, or litigation is instituted, the Commissioner shall determine whether or not to stay the reexamination, reissue or interference proceeding. [If reexamination is stayed for the conduct of a reissue proceeding, the reissue proceeding shall take into account prior art provided by the requester for reexamination and the reexamination requester will be granted at least the same degree of participation in the reissue proceeding which the requester would have had in the reexamination proceeding. Any reexamination proceeding stayed for the conduct of a reissue proceeding shall be terminated by the grant of the reissued patent.]

* * * * *

(d) If a reissue application and a reexamination proceeding on which an order pursuant to §1.525 has been mailed are pending concurrently on a patent, a decision will normally be made to merge the two proceedings or to stay one of the two proceedings. Where merger of a reissue application and a reexamination proceeding is ordered, the merged examination will be conducted in accordance with §§1.171–1.179 and the patent owner will be required to place and maintain the same claims in the reissue application and the reexamination proceeding during the pendency of the merged proceeding. The examiner's actions and any responses by the patent owner in a merged proceeding will apply to both the reissue application and the reexamination proceeding and be physically entered into both files. Any reexamination proceeding merged with a reissue application shall be terminated by the grant of the reissued patent.

10. Section 1.570 is proposed to be amended by revising paragraph (e) to read as follows:

§1.570 Issuance of reexamination certificate after reexamination proceedings.

* * * * *

(e) If the reexamination proceeding is terminated by the grant of a reissued patent as provided in §[1.565(b)] 1.565(d) , the reissued patent will constitute the reexamination certificate required by this section and 35 U.S.C. 307.

* * * * *

Oct. 27, 1981.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

ROBERT B. ELLERT,
Acting Assistant Secretary For Productivity, Technology and Innovation.

[FR Doc. 81-32497 Filed 11-9-81; 8:45 am]

[1013 O.G. 19]

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(90) Interim Reissue, Reexamination, Protest, And Examination Procedures In Patent Cases Pending Proposed Revision of 37 CFR §§1.11, 1.56, 1.106, 1.175, 1.176, 1.193, 1.291, 1.555, 1.565, and 1.570.

This notice sets forth, in general, the practice the Office intends to follow pending a final determination on the "Notice of proposed rulemaking" published in the Federal Register on November 10, 1981, at 46 F.R. 55666–55672. The "Notice of proposed rulemaking" is also being published in this issue of the Official Gazette.

Practice Relating To §1.11

Any reissue application which is presently open to inspection by the general public pursuant to present §1.11(b), and any reissue application filed before the effective date of a change in the rule, will continue to be open to inspection by the general public. No restriction of access to those reissue applications is contemplated at this time, either during their pendency before the Office, or after an abandonment of the reissue application. The filing of reissue applications will continue to be announced in the Official Gazette pending revision of §1.11(b).

Practice Relating To §1.56

Any issues arising under §1.56(d) prior to the effective date of a change in paragraph (d) will continue to be handled in accordance with paragraph (d) as it presently exists. If paragraph (d) is amended as proposed, the Office presently intends to apply the revised procedures to any applications then pending which have not been the subject of a final Office decision on questions of "fraud" or violation of the duty of disclosure.

Any petitions to strike applications from the files which have been filed prior to the date of publication of this Notice in the Official Gazette will continue to be treated in accordance with the practices in effect prior to this Official Gazette Notice via the appropriate sections of the Manual of Patent Examining Procedure.

Any petition to strike an application from the files which is filed after the date of publication of this Notice will be considered in accordance with the procedure set forth in the "Notice of proposed rulemaking" insofar as participation by the petitioner is concerned. Since the provisions of 37 CFR 1.56 now in effect do not guarantee a member of the public the right to participate fully in Office consideration of petitions to strike applications, it is considered appropriate and proper to restrict participation on behalf of a petitioner as set forth in the "Notice of proposed rulemaking" while such proposed rulemaking is pending. At this time the degree of participation is solely at the discretion of the Commissioner and the Commissioner is hereby acting in his discretion to restrict such participation. Accordingly, any petition to strike an application from the files which is filed after the date of publication of this Notice must include a self-addressed postcard specifically identifying the petition and the application to which the petition is directed if an acknowledgement of the filing of the petition is desired. A member of the public filing a petition to strike an application after the date of publication of this Notice will not receive any communications from the Office relating to the petition, other than the return of a self-addressed postcard which the Office will stamp and return in order to acknowledge receipt of the petition. All Office communications will be conducted with the applicant in accordance with the procedures set forth in the proposed rulemaking, which procedures are those currently in effect.

Practice Relating To §1.106

No interim practice is necessary regarding this proposed revision since it would not constitute a change in practice, but would merely make §1.106 more closely reflect current practice.

Practice Relating To §1.175

Any applications filed under §1.175(a)(4) prior to the effective date of any change in the rule will be examined until the application is amended and a reissue patent issues thereon or the application becomes abandoned.

Practice Relating To §1.176

The examination of any applications filed prior to the effective date of any change in the rule will continue to be delayed for two months after the announcement of

the filing in the Official Gazette, except where the delay period is waived by a decision on a petition under 37 CFR 1.183.

Practice Relating To §1.193(c)

No interim practice is necessary regarding this proposed revision since the practice of rejecting claims pursuant to §1.56(d) will not be adopted prior to the effective date of a change in paragraph (d).

Practice Relating To §1.291

Any protest against a pending application which is filed after the date of publication of this Notice in the Official Gazette will be treated essentially in accordance with the procedures set forth in the "Notice of proposed rulemaking." Any protests which have been filed prior to the date of publication of this Notice in the Official Gazette will continue to be treated in accordance with the practices in effect prior to this Official Gazette Notice via the appropriate sections of the Manual of Patent Examining Procedure. Since the provisions of 37 CFR 1.291 now in effect do not guarantee a member of the public the right to participate fully in Office consideration of protests filed under §1.291, it is considered appropriate and proper to restrict participation on behalf of a protestor essentially as set forth in the "Notice of proposed rulemaking" while such proposed rulemaking is pending. At this time the degree of participation is solely at the discretion of the Commissioner and the Commissioner is hereby acting in his discretion to restrict such participation. Accordingly, any protest filed after the date of publication of this Notice will be acknowledged as set forth in present §1.291 on a self-addressed postcard which protestor is hereby advised to include with the protest. The self-addressed postcard must specifically identify the protest and the application to which the protest is directed, to the extent such identifying data for the application is known. A member of the public filing a protest against a pending application after the date of publication of this Notice will receive no communication from the Office relating to the protest, other than the self-addressed postcard which the Office will stamp and return in order to acknowledge receipt of the protest as set forth in present §1.291(a). All Office communications will be conducted with the applicant in accordance with the procedures set forth in the proposed rulemaking, which procedures are those currently in effect. Pending adoption of the proposed rulemaking the Office will consider protests which comply with present §1.291(a) even though the protest does not include all the items enumerated in proposed new paragraph (b) of §1.291.

Practice Relating To §1.555

No interim practice is necessary regarding this proposed revision since it merely makes §1.555 more closely parallel §1.56 and more specifically defines the responsibility of a patent owner in a reexamination proceeding.

Practice Relating To §1.565

No interim practice is necessary regarding this proposed revision since it merely clarifies, but does not change, present practice.

Practice Relating To §1.570

No interim practice is necessary since this proposed revision merely reflects the paragraph change proposed in §1.565.

CONCLUSION

The present interim procedures will be in effect until further notice and pending a final determination on the proposed rulemaking.

DONALD J. QUIGG,
Nov. 16, 1981. *Deputy Commissioner of Patents & Trademarks.*

[1013 O.G. 18]

MISCELLANEOUS

(91) **Hearings Before the Board of Appeals**

In recent years the backlog of cases awaiting decision by the Board of Appeals has grown substantially. The average time elapsing between filing of the examiner's answer and final disposition is now roughly 17 months. Intensive effort by the Board and greater use of acting examiners-in-chief have been successful in raising the number of dispositions, but at the same time the number of appeals continues to grow. Thus in the first six months of 1974, the Board disposed of 1,193 appeals but received 1,915; in the last half of the year the Board disposed of 1,993 appeals but received 2,179.

In this connection it will be helpful if applicants and attorneys will dispense with oral hearings except where unusual circumstances are present which make a hearing important to the decision. Appeals submitted on brief receive just as careful consideration as those in which oral argument is presented, nor are any implications drawn as to the merits of the appeal from failure to request a hearing. It has been the Board's experience that in the ordinary case the hearing is not of great value in arriving at the ultimate decision.

Appellants are also encouraged to review cases where a hearing has already been requested, with a view to withdrawing the request if it is not necessary. It is particularly important that the Board be given timely notice whenever circumstances prevent the applicant or his representative from appearing at a scheduled hearing.

Rule 194 (37 CFR 1.194) limits oral argument to thirty minutes unless otherwise ordered by the Board. It has been the Board's experience, however, that effective arguments can be presented in less than thirty minutes in most cases. Effective immediately the Board will be informing appellants in the notices of hearing mailed to them that oral argument will be limited to *twenty minutes* unless otherwise ordered before the hearing begins.

The assistance of the public will be appreciated.

C. MARSHALL DANN,
Mar. 20, 1975. *Commissioner of Patents and Trademarks.*

[933 O.G. 1010]

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(92) **Access to Interference Settlement Agreements by Government Agencies**

Under the provisions of 35 U.S.C. §135(c), a party to an interference filing a copy of a settlement agreement may request that the copy be kept separate from the file of the interference, and made available only to Government agencies on written request, or to any person on a showing of good cause.

In order to provide the parties with a record of the inspection of such agreements by Government agencies, a representative of an agency will henceforth be required to present a written request, similar to the following, for each interference in which the inspection and/or copying of the agreement(s) is desired:

Date:_____

To: Clerk, Board of Patent Interferences

Pursuant to the provisions of 35 U.S.C. 135(c), please permit .....
the bearer(s) of this letter, to [ ] inspect and/or [ ] copy the settlement agreement(s) filed in Interference No. .....
The information gained from such inspection and/or copying will be kept in confidence and will not be disclosed to any other person except for official investigative or law enforcement purposes.

.....
Name, Title

.....
Agency

The request will be placed in the folder containing the copy of the agreement, where it may be inspected by the parties or their authorized representatives.

This procedure will be applicable only to inspection or copying by the representatives of Government agen-

cies, since no person other than a representative of a Government agency, or of a party, will be granted access to a copy of an interference settlement agreement which is kept separate from the interference file except by way of a petition for access thereto, see M.P.E.P. § 1002.02(k), item 2, and the parties to the interference are normally provided with copies of any such petition.

LUTRELLE F. PARKER,
June 5, 1978. *Acting Commissioner of Patents and Trademarks.*

[972 O.G. 2]

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(93) Accessibility of Non-Final Discovery Opinions and Orders Issued by the Board of Patent Interferences

A number of inquiries have been received from the patent bar and other interested persons relating to discovery practice under 37 C.F.R. §1.287 before the Board of Patent Interferences. The inquiries indicate a need for making available to the public non-final Board opinions, including concurring and dissenting opinions, as well as orders, made in the adjudication of discovery matters before the Board. While non-final opinions need not be made available to the public [5 U.S.C. §552(a)(2)], in order to satisfy the need, copies of non-final opinions issued by the Board will be kept in a file in the Service Branch of the Board in the U.S. Patent and Trademark Office (Crystal Plaza, Building 6, Eleventh Floor, Room 1116, Arlington, Virginia). Opinions in the file may be reviewed by the public during normal business hours (8:30 A.M. to 5:00 P.M.). Copies of opinions may be made by the public on reproducing equipment in the Service Branch with tokens at a cost of $0.15 per page or copies may be ordered at a cost of $0.30 per page [37 C.F.R. 1.21(b)].

In view of the provisions of 35 U.S.C. §122 and 37 C.F.R. §1.11(a), a consent will be obtained by the Office from all parties in an interference before an opinion issued in connection with the interference is placed in the file if the interference file is not otherwise available to the public. Preliminary indications are that the parties and their counsel generally consent.

In order to obtain optimum dissemination of the information contained in the file, opinions placed therein will be indexed according to specific topics. Copies of the index will be updated from time to time as the need occurs. Specific questions relating to the index and file may be directed to the Patent Interference Examiners.

The initial index is as follows:

Index

1.00 Discovery in general [37 C.F.R. §1.287]
- 1.10 Requests and service under §1.287(a)
- 1.20 Requests under §1.287(b)
- 1.30 Motions for additional discovery under §1.287(c)
  - 1.31 Related to derivation
  - 1.32 Related to abandonment, suppression, and concealment
  - 1.33 Related to inequitable conduct
  - 1.34 Other
- 1.40 Motions under §1.287(d)(1)
- 1.50 Action under §1.287(d)(2)
- 1.60 Agreements under §1.287(e)

C. MARSHALL DANN,
Mar. 5, 1976 *Commissioner of Patents and Trademarks.*

[944 O.G. 2098]

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(94) Extensions of Time and Filing of Papers in Interferences

A recent sample of the interferences declared during fiscal years 1971–1975 has shown that since the 1950–1959 period there has been an increase of 27 days in the approximately one and one-half year pendency time of the average interference. This increase has occurred in spite of the Commissioner's notice of April 24, 1964, 802 O.G. 601, and an extensive revision of the interference rules in 1965.

While the failure to achieve any reduction in average interference pendency time may in part be attributable to the adoption in 1971 of 37 CFR 1.287(a)(2), which provides for the setting of additional time periods for purposes of discovery, it appears that a considerable reduction would result if the parties were to adhere to the times originally set by the Office, rather than seeking extensions of those times. Accordingly, stipulations or motions for extensions of time under 37 CFR 1.245 will not henceforth be approved or granted, respectively, unless accompanied by a detailed showing of facts sufficient to establish that the action for which the extension is sought could not have been or cannot be taken or completed during the time previously set therefor, and that the entire extension appears necessary for the taking or completion of that action. Since the Office favors the amicable settlement of interferences, the foregoing requirement will be liberally applied in the case of a first request for extension of time for the purpose of negotiating settlement.

Another factor which adversely affects the pendency time of the average interference is the number of papers filed. While parties are certainly entitled to exercise their rights in filing papers provided for by the rules, many papers are also filed that are not provided for by the rules, such as replies to replies to oppositions to motions under 37 CFR 1.231, and replies to oppositions to motions or petitions under 37 CFR 1.243 or 1.244. These unprovided-for papers appear to be generally unnecessary, cause a considerable increase in the size of the interference files, and delay determination of the motions or petitions to which they relate. Therefore, in the future papers filed in interference proceedings will be given no consideration unless they are specifically provided for by the rules. In this regard, particular attention is directed to 37 CFR 1.228, 1.231(b), 1.237, 1.243 and 1.244.

C. MARSHALL DANN,
Nov. 9, 1976. *Commissioner of Patents and Trademarks.*

[953 O.G. 2]

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(95) Petitions in Interference Cases From Decisions of The Board on Motions for Additional Discovery Under 37 CFR 1.287(c)

Notwithstanding the clear statement in the last sentence of 37 CFR 1.287(c), parties in interference cases continue to seek review by the Commissioner of decisions of the Board of Patent Interferences on motions for additional discovery under 37 CFR 1.287(c). Review of such a decision can be had along with judicial review of a decision on the question of priority. *Cochran* v. *Kresock*, 530 F.2d 385, 188 USPQ 553 (CCPA 1976); *Comstock* v. *Kroekel*, 200 USPQ 548 (Comm'r. Pat. 1978). Accordingly, parties in interference cases are reminded that a petition to the Commissioner should not be filed for the purpose of seeking review of an interlocutory decision of the Board granting or denying a motion for additional discovery under 37 CFR 1.287(c). See also *Fenstermacher* v. *Daugherty*, 189 USPQ 536 (Comm'r. Pat. 1975) and *Sheehan* v. *Doyle*, 202 USPQ 783 (Comm'r. Pat. 1978). The filing of such a petition only serves to delay the ultimate disposition of interferences on the merits. The filing of a paper for the mere purpose of delay is not permitted by the rules. 37 CFR 1.346. The Board of Patent Interferences will no longer grant a stay of proceedings pending disposition of a petition to the Commissioner seeking review of a decision of the Board on a motion for additional discovery under 37 CFR 1.287(c).

SIDNEY A. DIAMOND,
Apr. 17, 1980. *Commissioner of Patents and Trademarks.*

[994 O.G. 28]

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(96) Petitions in Interference Cases to Strike Applications for Alleged Violations of 37 CFR §1.56

Not infrequently a party in an interference will file a petition requesting the Commissioner to enter an order under 37 CFR §1.56(d) striking from the files a patent application involved in an interference. The issues raised by such a petition have been determined to be ancillary to priority within the meaning of 37 CFR §1.258(a). See e.g., *Norton* v. *Curtiss*, 57 CCPA 1384, 433 F. 2d 779, 167 USPQ 532 (1970); *Langer* v. *Kaufman*, 59 CCPA 1261, 465 F. 2d 915, 175 USPQ 172 (1972). Hence, the issues may be considered by the Board of Patent Interferences at final hearing if properly and timely presented.

The normal disposition of a petition to strike an application involved in an interference is to dismiss the petition, without prejudice to renewal following termination of the interference. Such a disposition allows the parties to develop the issues before the Board of Patent Interferences. If the party filing the petition ultimately prevails in the interference, further action on the petition may be unnecessary. Should action on the petition be necessary, the Commissioner has the benefit of the view of the Board of Patent Interferences on the issues.

Under present practice, the Board of Patent Interferences generally will hold a petition to strike an application involved in an interference until the time for opposition has expired. The file is then forwarded to the Commissioner, where the petition is normally disposed of as indicated in the preceding paragraph. This practice is time consuming and needlessly delays the interference. In order to prevent such delays, in the future the Patent Interference Examiner is authorized to enter an order dismissing a petition to strike an application involved in an interference, without prejudice to renewal of the petition after termination of the interference. The petition should be dismissed immediately upon receipt, without suspension of the interference.

Petitions to strike an application not involved in an interference will continue to be handled in the Office of the Assistant Commissioner for Patents in the manner previously announced.

SIDNEY A. DIAMOND,
Aug. 11, 1980. *Commissioner of Patents and Trademarks.*

[998 O.G. 8]

COMMISSIONER'S NOTICE

(97) Practice under 37 CFR §1.225(b)

When a junior party to an interference is placed under an order to show cause why judgment should not be entered pursuant to 37 CFR §1.225 and requests final hearing to contest an ancillary matter, either the junior or senior party may file a motion for permission to take testimony pursuant to 37 CFR §1.225(b) and the last sentence of 37 CFR §1.251(b). However, some uncertainty has arisen as to when the motion must be filed and what it must contain.

Motion by the Junior Party

When a junior party is placed under an order to show cause and the junior party desired a testimony period, the motion for permission to take testimony should be filed preferably before the time set for responding to the order to show cause. The motion will be considered timely, however, if filed no later than twenty (20) days after the Board of Patent Interferences enters an order setting final hearing.

There are instances where the requested testimony relates to priority. For example, the junior party may occasionally desire to take testimony to establish prior inventive acts alleged in a preliminary statement even though those acts are subsequent to the senior party's effective filing date. This situation arises when (1) the junior party's preliminary statement dates fall between the filing date of the senior party's involved application and the filing date of a prior application accorded to the senior party, (2) the junior party has unsuccessfully contended in a motion under 37 CFR §1.231 that the senior party should not be accorded benefit of the prior application, and (3) the junior party has requested final hearing to review the examiner's adverse decision on the motion.

When the requested testimony includes priority testimony, the motion to take testimony may be *pro forma, viz.*, a simple request that a testimony period be set to obtain priority evidence. Normally, however, when a junior party seeks to take testimony under 37 CFR § 1.225(b), the proposed testimony relates solely to ancillary matters. When the requested testimony relates solely to ancillary matters, the motion must comply with the provisions of 37 CFR §1.225(b)—a showing of good cause must be submitted and a *pro forma* request would not be sufficient. See generally Rivise & Caesar, *Interference Law and Practice*, Vol. III, §§376–377 (1947).

Motion by the Senior Party

There are occasions when a senior party may desire a testimony period even if the junior party does not request a testimony period. See e.g., *Lorenian v. Winstead*, 127 USPQ 501 (Bd.Int. 1959). When a senior party desires a testimony period, the motion for permission to take testimony should be filed promptly after the Board of Patent Interferences enters an order setting final hearing, but in no event later than twenty (20) days after entry of such order. A senior party should take into account the fact that a junior party will begin preparation of a brief for final hearing after receiving notice of the briefing schedule. Therefore, a senior party should not be permitted to let a junior party expend unnecessary energy preparing a brief for final hearing if the senior party plans to move to take testimony.

As in the case of a junior party, a request to take testimony relating to priority may be *pro forma*. A request to take testimony limited to ancillary matters must comply with 37 CFR §1.225(b). See 37 CFR 1.251(b), last sentence.

RENE D. TEGTMEYER,
June 15, 1981. *Acting Commissioner of Patents and Trademarks.*

[1008 O.G. 9]

DEPARTMENT OF COMMERCE

(98) Patent and Trademark Office

37 CFR Part 1

Patent Interference Proceedings

Agency: Patent and Trademark Office, Commerce.

Action: Final rule.

Summary: This document amends the regulations governing patent interference proceedings. The amendments are needed, and intended to (1) clarify and more specifically define the matters which may be raised before the Board of Patent Interferences at final hearing; (2) broaden the present requirements relating to printed testimony and briefs at final hearing; and (3) specify the manner in which discovery may be used.

Dates: Effective date: December 31, 1981.

For Further Information Contact: Ian A. Calvert, Chairman, Board of Patent Interferences, by telephone at (703) 557-3625, or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information: A notice of proposed rulemaking concerning the amendment of 37 CFR 1.225, 1.231, 1.253, 1.254 and 1.258, and the addition of §1.288, was published in the Federal Register on November 25, 1980 (45 FR 78172). Interested persons were requested to submit written comments on or before February 4, 1981. Three comments were received.

One commenter requested that the deadline for comments be extended to April 16, 1981, the date set for comments on another proposal relating to the rules for reexamination and inter partes protest proceedings (46 FR 3162). An extension was not considered necessary, and in any event, no comments concerning the present rules were received after the published deadline.

It was suggested that §1.258(a) should not be amended to specify that a motion under §1.231(a) must be transmitted to the primary examiner in order for the matter raised in the motion to be considered by the Board of Patent Interferences at final hearing. Proposed §1.258(a)(1)(i) was objected to because a decision by the Patent Interference Examiner denying transmission would only be reviewable by petition and not by the Board. Instead of the proposal, it was suggested that §1.258 be amended to require only that a matter have been raised in a motion complying with §1.231(a) and (b) in order to be considered by the Board at final hearing.

This suggestion has not been adopted. As stated in the notice of proposed rulemaking, the proposed changes in §1.258 were not intended to alter the existing practice. The suggestion would change the practice and would, in effect, make the propriety of dismissing a motion under §1.231 reviewable by the Board of Patent Interferences at final hearing. Such a procedure would not be desirable. It would leave unsettled what issues could be raised at final hearing, lead to greater uncertainty during the taking of testimony, and impose an additional burden on the Board.

The suggestion expressed a belief that limiting review of a Patent Interference Examiner's dismissal of a §1.231 motion to review by petition is unsatisfactory. However, in the considerable time during which this procedure has been followed, it has not been found to be unsatisfactory. Whether a motion should be transmitted to the Primary Examiner is a matter that rests largely within the discretion of the Patent Interference Examiner, and any party may by petition challenge a decision of the Patent Interference Examiner to transmit or not to transmit a motion. A decision refusing to transmit a motion is scrutinized more thoroughly on petition than a decision transmitting a motion, "as it is considered desirable to submit all matters raised by motion under 37 CFR 1.231 to the primary examiner for decision on the merits where possible." *Gutman* v. *Beriger*, 200 USPQ 596, 597 (Comr. Pats. & TM, 1978). The rights of the parties are deemed to be adequately protected by limiting review of the transmission or dismissal of a motion under §1.231 to a request for reconsideration and/or petition under §§1.243(d) and 1.244, respectively.

It was also suggested that "and (b)" be inserted after "paragraph (a)" in the first sentence of 37 CFR 1.231(d). This suggestion has been adopted.

One commenter noted that proposed §1.253(e) would apparently prohibit spiral-type bindings, while at the same time requiring the testimony to be bound to lie flat when open. The proposed prohibition against "ring-type bindings" was taken from Rule 5.8(a) of the U.S. Court of Customs and Patent Appeals. It is understood that the Court prohibits such bindings because of the manner in which its records are stored. However, the Patent and Trademark Office stores records in a different manner, and generally prefers spiral-type bindings as the most convenient method of binding the testimony so that it will lie flat when open. Therefore, the sentence "Plastic and metal ring-type bindings are not acceptable" is not being adopted. While it is recognized that the rule will permit bindings which would not be acceptable to the Court, it is considered that the advantages gained by having the testimony and briefs lie flat when they are being reviewed by Patent and Trademark Office personnel and others outweigh any disadvantages which may be caused by the discrepancy between this paragraph and the Court rule.

No adverse comments were received relative to the proposed addition of new §1.288.

Environmental and Other Considerations

These rule changes will not have any significant impact on the quality of the human environment or the conservation of energy resources.

These rule changes will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 601 *et seq.*).

The Patent and Trademark Office has determined that these rule changes do not constitute a "major rule" as defined in Section 1(b) of Executive Order 12291 (45 FR 13193), since they would benefit parties in interference proceedings and impose no additional burdens on the Office.

Amendment of Regulations

PART 1—RULES OF PRACTICE IN PATENT CASES

In consideration of the comments received, and pursuant to the authority of the Commissioner of Patents and Trademarks under 35 U.S.C. 6, 37 CFR Part 1 is amended as follows:

1. In §1.225, paragraph (a) is revised to read as follows:

§1.225 Failure of junior party to file statements or to overcome filing date of senior party.

(a) If a junior party to an interference fails to file a preliminary statement, or if his statement fails to overcome the effective filing date of another party, judgment on the record will be entered against that junior party unless:

(1) Under the provisions of §1.258(a), he would be entitled to raise before the Board of Patent Interferences a matter which is ancillary to priority and which, if decided in his favor, would remove the basis for judgment on the record against him, and

(2) Within a time set by the patent interference examiner, not less than 30 days, he requests that final hearing be set to review such matter. If the matter was raised in a motion which was dismissed for one of the reasons specified in §1.258(a)(1)(iii), the request for final hearing must be accompanied by a motion to take testimony under paragraph (b) of this section.

* * * * *

2. In §1.231, paragraph (d) is revised to read as follows:

§1.231 Motions before the primary examiner.

* * * * *

(d) All proper motions as specified in paragraphs (a) and (b) of this section, or of a similar character, will be transmitted to and considered by the primary examiner without oral argument, except that consideration of a motion to dissolve on a ground other than no interference in fact will be deferred to final hearing before a Board of Patent Interferences where the motion raises a matter which would be reviewable at final hearing under §1.258(a) and such matter is raised against a patentee or has been ruled upon by the Board of Appeals or by a court in ex parte proceedings. Also consideration of a motion to add or remove the names of one or more inventors may be deferred to final hearing if such motion is filed after the times for taking testimony have been set. Requests for reconsideration will not be entertained.

* * * * *

3. In §1.253, paragraph (e) is revised to read as follows:

§1.253 Copies of the testimony.

* * * * *

(e) When the copies of the testimony are submitted in printed form, they may be produced by standard typographic printing or by any process capable of producing a clear black permanent image. All printed matter except on covers must appear in at least 11 point type on opaque, unglazed paper. Margins must be justified. Footnotes may not be printed in type smaller than 9 point. The page size shall be either 7-5/8 by 10-1/4 inches (19.4 by 26 cm.) with type matter 4-1/6 by 7-1/6 inches (10.6 by 18.2 cm.), or 8-1/2 by 11 inches (21.6 by 27.9 cm.) with type matter 6-1/2 by 9-1/2 inches (16.5 by 24.1 cm.). The testimony shall be bound to lie flat when open. Twenty-five additional copies for the United States Court of Customs and Patent Appeals, should appeal be taken, may also be filed; if no appeal be taken, the twenty-five copies will be returned to the party fil-

ing the testimony.

* * * * *

4. Section 1.254 is amended by adding the following sentence:

§1.254 Briefs at final hearing.

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The board may refuse to accept any brief which has been printed, typewritten, or bound otherwise than in substantial conformity with this section.

5. Section 1.258 is revised to read as follows:

§1.258 Matters considered in determining priority.

(a) In determining priority of invention, the Board of Patent Interferences will consider only priority of invention on the evidence submitted, and matters ancillary thereto. A party shall be entitled to raise a matter which is ancillary to priority only if:

(1) The matter was raised by the party in a motion under §1.231(a), and:

(i) The motion was transmitted to and decided by the primary examiner; or

(ii) consideration of the motion was deferred to final hearing; or

(iii) The motion was dismissed as being based on facts sought to be established by affidavits, declarations or evidence outside of official records and printed publications, or as being based on a ground which would require the taking of testimony; or

(2) The matter was raised by the party in opposition to a motion under §1.231(a) (2), (3), (4) or (5) which was granted over his opposition; or

(3) The party shows good reason why the matter was not raised as specified in paragraphs (a)(1) or (a)(2) of this section.

(b) To prevent manifest injustice the Board of Patent Interferences may in its discretion consider a matter which is ancillary to priority even though it would not otherwise be entitled to consideration under paragraph (a) of this section.

(c) At final hearing between an application and a patent the prior art of record in the patent file may be referred to for the purpose of construing the issue.

6. Section 1.288 is added to read as follows:

§1.288 Use of discovery.

(a) If a party intends to rely upon an admission or upon an answer to an interrogatory, obtained by discovery, the admission or answer may be introduced into evidence by filing, before the closing of the time for taking the testimony of the party (before the time for taking the testimony in chief if such admission or answer is not in rebuttal), a copy of the admission and the request therefor and/or a copy of the interrogatory and its answer, together with a notice of reliance thereon.

(b) A party may not rely upon any other matter obtained by discovery unless it is introduced into evidence pursuant to §§1.271 to 1.286.

Dated: October 5, 1981.
Gerald J. Mossinghoff,
Commissioner of Patents and Trademarks.

Dated: October 10, 1981.
Approved:
Robert B. Ellert,
Acting Assistant Secretary for Productivity, Technology and Innovation.

[FR Doc. 81-31096 Filed 10-26-81; 8:45 am]
BILLING CODE 35 10-16-M

[1012 O.G. 27]

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(99) **Disclosure Document Program**

This notice consolidates and supersedes the notices of Mar. 26, 1969 (862 O.G. 1) and Aug. 11, 1970 (878 O.G. 1) relating to the Patent Office Disclosure Document Program. Under this program the Patent Office accepts and preserves, for a period of two years, papers referred to as "Disclosure Documents." These papers may be used as evidence of the dates of conception of inventions.

The Program

A paper disclosing an invention and signed by the inventor or inventors may be forwarded to the Patent Office by the inventor (or by any one of the inventors when there are joint inventors), by the owner of the invention, or by the attorney or agent of the inventor(s) or owner. It will be retained for two years and then be destroyed unless it is referred to in a separate letter in a related patent application within said two years.

A Disclosure Document is not a patent application and the date of its receipt in the Patent Office will not become the effective filing date of any patent application subsequently filed. However, like patent applications, these documents will be kept in confidence by the Patent Office. If patent protection is desired, a patent application should be filed as soon as possible.

This program does not diminish the value of conventional witnessed and notarized records as evidence of conception of an invention, but it should provide a more credible form of evidence than that provided by the popular practice of mailing a disclosure to oneself or another person by registered mail. The program is made available as a service to those persons desiring to use it.

Content of Disclosure Document

Although there are no restrictions as to content and claims are not necessary, the benefits afforded by a Disclosure Document will depend directly upon the adequacy of the disclosure. Therefore, it is strongly urged that the document contain a clear and complete explanation of the manner and process of making and using the invention in sufficient detail to enable a person having ordinary knowledge in the field of the invention to make and use the invention. When the nature of the invention permits, a drawing or sketch should be included. The use or utility of the invention should be described, especially in chemical inventions.

The Disclosure Document must be limited to written matter or drawings on paper or other thin, flexible material, such as linen or plastic drafting material, having dimensions or being folded to dimensions not to exceed 8 1/2 by 13 inches. Photographs also are acceptable. Each page should be numbered. Text and drawings should be sufficiently dark to permit reproduction with commonly used office copying machines.

A $10 fee is charged for filing a Disclosure Document. Payment must accompany the Disclosure Document when it is submitted to the Patent Office.

In addition to the $10 fee, the Disclosure Document must be accompanied by a stamped, self-addressed envelope and a separate paper in duplicate, signed by the inventor, stating that he is the inventor and requesting that the material be received for processing under the Disclosure Document Program. The papers will be stamped by the Patent Office with an identifying number and date of receipt, and the duplicate request will be returned in the self-addressed envelope together with a warning notice indicating that the Disclosure Document may be relied upon only as evidence and that a patent application should be diligently filed if patent protection is desired. The inventor's request may take the following form:

"The undersigned, being the inventor of the disclosed invention, requests that the enclosed papers be accepted under the Disclosure Document Program, and that they be preserved for a period of two years."

Retention

The Disclosure Document will be preserved in the Patent Office for two years after its receipt and will then be destroyed unless it is referred to in a separate letter in a related patent application filed within the two-year period. The Disclosure Document must be referred to in the separate letter by title, number, and date of receipt. Acknowledgment of receipt of such letters will be made in the next official communication or in separate

letter from the Patent Office. Unless it is desired to have the Patent Office retain the Disclosure Document beyond the two-year period, it is not required that it be referred to in a patent application.

Warning as to Limitations

The two-year retention period should not be considered to be a "grace period" during which the inventor can wait to file his patent application without possible loss of benefits. It should be recognized that in establishing priority of invention an affidavit or testimony referring to a Disclosure Document must usually also establish diligence in completing the invention or in filing the patent application since the filing of the Disclosure Document.

Inventors are also reminded that any public use or sale in the United States, or publication of the invention anywhere in the world, more than one year prior to the filing of a patent application on that invention will prohibit the granting of a patent on that invention.

If the inventor is not familiar with what is considered to be "diligence in completing the invention" or "reduction to practice" under the patent law, or if he has other questions about patent matters, the Patent Office advises him to consult an attorney or agent registered to practice before the Patent Office. Patent attorneys and agents may be found in the telephone directories of most major cities. Also, many large cities have associations of patent attorneys which may be consulted.

RICHARD A. WAHL,
Jan. 4, 1971. *Assistant Commissioner of Patents.*

[883 O.G. 3]

(100) **Suspension of Action Under 37 CFR 1.103 and Under 37 CFR 1.212**

The purpose of this notice is to clarify existing Office practice with respect to suspension of action. "Suspension of action" under 37 CFR 1.103 applies only to the situation where action is to be taken *by the Examiner.* In other words, action cannot be suspended in an application which contains an outstanding Office action awaiting response by the applicant.

Under 37 CFR 1.212, upon declaration of an interference, ex parte prosecution of an application is suspended and any outstanding Office actions are considered as withdrawn by operation of the rule. *Ex parte Peterson,* USPQ 119 (Commissioner of Patents, 1941). Upon termination of the interference, the Examiner will reinstate the action treated as withdrawn by operation of 37 CFR 1.212 and set a statutory period for response. The formats set forth in MPEP 1109.01 and MPEP 1109.02 may be followed.

Careful adherence to the distinction set forth above will prevent any question of abandonment from arising in connection with cases in which suspension of prosecution has occurred.

WILLIAM FELDMAN,
Mar. 7, 1978. *Deputy Assistant Commissioner for Patents.*

[969 O.G. 8]

(101)

POSTAL SERVICE EMERGENCY CONTINGENCY PLAN

The U.S. Patent and Trademark Office is establishing the following contingency plan for filing any paper or paying any fee in the Office in the event of an emergency caused by any major interruption in the mail service in the United States. Upon determination by the Commissioner of Patents and Trademarks that such an emergency exists, a notice activating the plan will be issued by the Commissioner. The activating notice will be published in the Wall Street Journal and made available in a special recorded telephone message at area code 703, 557-3158. Also, certain publications, patent bar groups, and other organizations closely associated with the patent system, will be notified. Termination of the program will be similarly announced. Where the postal emergency is not nationwide, the Commissioner will designate the areas of the United States in which the procedures outlined below will be in effect.

U.S. Department of Commerce District Offices (formerly referred to as Department of Commerce Field Offices) will be designated on an emergency basis, as receiving stations for filing papers and paying fees in the U.S. Patent and Trademark Office.

Upon determination that an emergency exists, the following procedures may be followed: All papers and fees should be enclosed in a sealed envelope addressed to the Patent and Trademark Office and deposited in one of the District Offices. Such papers will be considered as received in the U.S. Patent and Trademark Office on the day of deposit. The District Office will date stamp each envelope and the accompanying receipt card which completely identifies the deposited papers. The receipt card will be returned to the depositor. Applicants or their representatives should assure the legibility of the date stamp.

District Office deposits should be limited to checks in payment of issue fees, new application papers wherein priority dates or statutory bars may be involved, amendments where the six month statutory period for response is about to expire, trademark oppositions, Section 8 affidavits, trademark renewals, and to other papers for which the patent and trademark statutes do not provide a remedy for failure to obtain a particular date.

Where papers originate from overseas, it is suggested that the papers be mailed to a registered agent in Canada, with a request that the papers be forwarded by courier to the nearest District Office in the United States.

In regard to pending applications, if the time for taking any action or paying any fee expires during the period that the Commissioner declares to be an emergency, the time will be extended until one month after the end of the emergency period, provided that such extension does not exceed the maximum period for response provided for in the statutes.

Since this extension of time will be automatic, there will be no record in the individual files to indicate that a response filed during the extended period is in fact timely. In order to provide a complete record, applicants or their representatives should file a paper referring to this notice in each case in which a response is filed during the extended period.

The addresses of the Department of Commerce District Offices, subject to subsequent changes, are as follows:

ALBUQUERQUE, N.M., 87101, Room 316, U.S. Courthouse (505) 766-2386.
ANCHORAGE, 99501, 632 Sixth Ave., Hill Bldg., Suite 412 (907) 265-4597.
ATLANTA, 30309, Suite 523, 1401 Peachtree St., NE. (404) 526-6000.
BALTIMORE, 21202, 415 U.S. Customhouse, Gay and Lombard Sts. (301) 962-3560.
BIRMINGHAM, ALA., 35205, Suite 200-201, 908 S. 20th St. (205) 325-3327.
BOSTON, 02116, 10th Floor, 441 Stuart St. (617) 223-2312.
BUFFALO, N.Y., 14202, Room 1312, Federal Bldg., 111 W. Huron St. (716) 842-3208.
CHARLESTON, W. VA., 25301, 3000 New Federal Office Bldg., 500 Quarrier St. (304) 343-6181, Ext. 375.
CHEYENNE, WYO., 82001, 6022 O'Mahoney Federal Center, 2120 Capitol Ave. (307) 788-2151.
CHICAGO, 60603, Room 1406, Mid-Continental Plaza Bldg., 55 E. Monroe St. (312) 353-4450.
CINCINNATI, 45202, 8028 Federal Office Bldg., 550 Main St. (515) 684-2944.
CLEVELAND, 44114, Room 600, 666 Euclid Ave. (216) 522-4750.
COLUMBIA, S.C., 29204, Forest Center, 2611 Forest Dr. (803) 765-5345.
DALLAS, 75202, Room 3E7, 1100 Commerce St. (214) 749-1515.
DENVER, 80202, Room 161, New Custom House, 19th and Stout Sts. (303) 837-3246.
DES MOINES, IOWA, 50309, 609 Federal Bldg., 210 Walnut St. (515) 284-4222.
DETROIT, 48226, 445 Federal Bldg. (313) 226-3650.
GREENSBORO, N.C., 27402, 203 Federal Bldg., W. Market St., P.O. Box 1950. (919) 275-9111, Ext. 345.
HARTFORD, CONN., 06103, Room 610-B, Federal Office Bldg., 450 Main St. (203) 244-3530.
HONOLULU, 96813, 286 Alexander Young Bldg., 1015 Bishop St. (808) 546-8694.
HOUSTON, 77002, 201 Fannin, 1017 Federal Office Bldg. (713) 226-4231.
INDIANAPOLIS, 46204, 355 Federal Office Bldg., 46 E. Ohio St. (317) 269-6214.
KANSAS CITY, MO., 64106, Room 1840, 601 E. 12th St. (816) 374-3142.
LOS ANGELES, 90024, 11201 Federal Bldg., 11000 Wilshire Blvd. (213) 824-7591.
MEMPHIS, 38103, Room 710, 147 Jefferson Ave. (901) 534-3213.
MIAMI, 33130, Rm. 821, City National Bank Bldg., 25 W. Flagler St. (305) 350-5267.
MILWAUKEE, 53203, Straus Bldg., 238 W. Wisconsin Ave. (414) 224-3473.
MINNEAPOLIS, 55401, 306 Federal Bldg., 110 S. Fourth St. (612) 725-2133.
NEW ORLEANS, 70130, Room 432, International Trade Mart, 2 Canal St. (504) 589-6546.
NEW YORK, 10007, 41st Floor, Federal Office Bldg., 26 Federal Plaza, Foley Sq. (212) 264-0634.
NEWARK, N.J., 07102, Gateway Bldg., (4th Floor) (201) 645-6214.
PHILADELPHIA, 19106, 9448 Federal Bldg., 600 Arch St. (215) 597-2850.
PHOENIX, ARIZ., 85004, 508 Greater Arizona Savings Bldg., 112 N. Central Ave. (602) 261-3285.
PITTSBURGH, 15222, 431 Federal Bldg., 1000 Liberty Ave. (412) 644-2850.
PORTLAND, ORE., 97205, 921 SW. Washington St., Suite 521, Pittock Block. (503) 221-3001.
RENO, NEV., 89502, 2028 Federal Bldg., 300 Booth St. (702) 784-5203.
RICHMOND, VA., 23240, 8010 Federal Bldg., 400 N. 8th St. (804) 782-2246.
ST. LOUIS, 63105, Chromalloy Bldg., 120 S. Central Ave. (314) 622-4243.
SALT LAKE CITY, 84111, 1201 Federal Bldg., 125 S. State St. (801) 524-5116.
SAN FRANCISCO, 94102, Federal Bldg., Box 36013, 450 Golden Gate Ave., (415) 556-5860.
SAN JUAN, P.R., 00902, Room 100, Post Office Bldg., (809) 723-4640.
SAVANNAH, 31402, 235 U.S. Courthouse and Post Office Bldg., 125-29 Bull St. (912) 232-4204.
SEATTLE, 98109, 706 Lake Union Bldg., 1700 Westlake Ave. North (206) 442-5615.

July 18, 1975.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

[937 O.G. 386]

(102) # Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 573-5152 Ext. 222
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

(103) **Examiner Testimony**

As stated in Section 1701 of the Manual of Patent Examining Procedure, patent examiners are forbidden to testify as patent experts or to express opinions, in testimony or otherwise, as to the invalidity of any issued patent. Patent examiners have, in connection with litigation involving patent validity, been called to testify on factual matters. In those cases, the practice has been to permit the examiner to testify only upon the issuance of a subpoena.

Henceforth, patent examiners will be permitted to testify on deposition in patent suits, without the need for a subpoena, provided the following conditions are satisfied:

1. The party proposing to take the testimony will state in writing, that the questions to be asked of the examiner will be phrased to comply with the permissible scope of inquiry as outlined in the protective orders contained in the Court opinions in *In re Mayewsky*, 162 USPQ 86, 89 and *Shaffer Tool Works v. Joy Manufacturing Co.*, 167 USPQ 170, 171: "... the scope of the oral depositions of the patent examiners is hereby limited to matters of fact and must not go into hypothetical or speculative areas or the bases, reasons, mental processes, analyses, or conclusions of the patent examiners in acting upon the patent applications maturing into the patent [in suit]." 167 USPQ 171.
2. That in addition to complying with the requirements of Rule 30 of the Federal Rules of Civil Procedure, the party taking the testimony will agree to give notice of the taking of the deposition of the patent examiner to the Solicitor, at least thirty days prior to the date on which the taking of the deposition is desired.
3. That the party taking the deposition arrange with the Solicitor to notice the deposition at a place convenient to the Patent Office.

If the party desiring to take the testimony of the examiner does not agree to the conditions enumerated, the Patent Office will not permit the examiner to be deposed without a subpoena and compliance with the procedure set forth in Section 7.02, Department of Commerce Administrative Order 205-12, June 29, 1967 as amended April 10, 1970. That section states:

> In any case where it is sought by subpoena, order or other compulsory process or other demand of a court or other authority (hereinafter referred to as a "demand") to require the production or disclosure of any record in the files of the Department of Commerce or other information acquired by an officer or employee of the Department as a part of the performance of his official duties or because of his official status, the matter shall be immediately referred for determination to the appropriate official described in subsection 4.01 of this order. If such official has discretion with respect to disclosure and he determines that it would be improper to comply with the demand, or if he has no discretion with respect to disclosure, the matter shall be promptly referred to the Secretary of Commerce for final determination. Unless and until the Secretary determines that the records or information should be produced, the officer or employee who appears in answer to the demand shall inform the court or other authority (*a*) that the section 7 of this order prohibits the officer or employee from producing or disclosing the records or other information demanded without the prior approval of the Secretary of Commerce, and (*b*) that the demand has been, or is being, as the case may be, referred for the prompt consideration of the Secretary. The officer or employee shall also provide the court or other authority with a copy of the regulations prescribed in this section 7 of this order, and shall respectfully request the court or other authority to stay the demand pending the receipt of instructions or directions from the Secretary of Commerce concerning the demand.

ROBERT GOTTSCHALK,
Mar. 13, 1972. *Commissioner of Patents.*

[897 O.G. 762]

(104) **No Change in Foreign Filing License Requirements**

It should be noted that the change to 37 CFR 5.19 deleting the requirement to obtain an export license for filing a patent application in a foreign country does not in any way alter the provisions of 35 U.S.C. 184. 35 U.S.C. 184 requires that a foreign filing license be obtained from the Patent and Trademark Office before any patent application, based on an invention made in the United States, is filed abroad unless a corresponding application has been on file in the USPTO for over six months.

Further information may be obtained by contacting Mr. T. H. Tubbesing at 703-557-2897, or Mr. Edward Drazdowsky at 703-557-2167.

WILLIAM FELDMAN,
Nov. 24, 1980. *Acting Assistant Commissioner, for Patents.*

[1001 O.G. 28]

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(105) **Department of Commerce**

Patent and Trademark Office

United States Adherence to the International Union for the Protection of New Varieties of Plants (UPOV)

On Nov. 12, 1980, the United States deposited its instrument of acceptance of the 1978 text of the UPOV Convention. The United States was the second State to adhere to this text, New Zealand having earlier done so.

The UPOV Convention will take effect with respect to the United States and the other adherents to the 1978 text upon a total of five adherences, three of which must be by present member States (States adhering to the 1961 text of the Convention). We expect at least three present member States to adhere shortly and the 1978 text to take effect, therefore, during 1981.

The United States deposited its instrument of acceptance on the basis of the legal protection offered for asexually reproduced plants under the plant patent law (35 U.S.C. 161–164). Accordingly, the Convention will apply only to asexually reproduced plants protected under this law. Steps are now being taken, however, by the Plant Variety Protection Office of the Department of Agriculture to conform the implementation of the Plant Variety Protection Act (7 U.S.C. 2321 et seq.) to the Convention's requirements. When this is done, the United States will notify the UPOV Secretariat that the Convention is also applicable in the United States to sexually reproduced plants protected under that Act.

Questions concerning the UPOV Convention may be directed to the Office of Legislation and International Affairs of the Patent and Trademark Office. This Office may be addressed as follows: Box 4, Commissioner of Patents and Trademarks, Washington, D.C. 20231. The Office's telephone number is (703) 557–3065.

SIDNEY A. DIAMOND,
Dec. 16, 1980. *Commissioner of Patents and Trademarks.*

[1002 O.G. 102]

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(106) **Taking Effect in the United States of the International Convention for the Protection of New Varieties of Plants**

The International Convention for the Protection of New Varieties of Plants (the UPOV Convention) will take effect in the United States on Nov. 8, 1981. It will apply to all applications for the patenting of plants under the provisions of Title 35, United States Code, which are filed on or after Nov. 8, 1981. The actual filing date will govern in determining whether the Convention will apply to an application, even though the

application may be entitled to an earlier effective date under section 119 or 120 of Title 35, United States Code.

In addition to the United States, the UPOV Convention will be in effect as of Nov. 8, 1981, in the following fourteen States: Belgium, Denmark, Federal Republic of Germany, France, Ireland, Israel, Italy, Netherlands, New Zealand, Republic of South Africa, Spain, Sweden, Switzerland, and the United Kingdom.

No changes in the patent law are needed to implement the UPOV Convention in the United States. An applicant for a plant patent will be required, however, to submit for registration a variety name for the plant to be patented. Registration is required by Article 13 of the UPOV Convention.

Registrability shall be determined in accordance with the International Code of Nomenclature for Cultivated Plants (1980). As an interim procedure pending the promulgation of an appropriate rule, inclusion of the variety name in the application will be accepted as a submission of the name for registration. No plant patent as a result of an application filed on or after Nov. 8, 1981, shall be issued without the registration of a variety name. Questions concerning this variety naming requirement or the UPOV Convention may be addressed to:

Mr. Michael K. Kirk, Director
Office of Legislation and
International Affairs
Box 4
U.S. Patent and Trademark Office
Washington, D.C. 20231

Mr. Kirk's telephone number is (703) 557-3065.

Oct. 15, 1981.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

[1011 O.G. 27]

INTERNATIONAL APPLICATION UNDER THE PATENT COOPERATION TREATY

REQUEST

THE UNDERSIGNED REQUESTS THAT THE PRESENT INTERNATIONAL APPLICATION BE PROCESSED ACCORDING TO THE PATENT COOPERATION TREATY

(The following is to be filled in by the receiving Office)

INTERNATIONAL APPLICATION No:

INTERNATIONAL FILING DATE:

(Stamp)
Name of receiving Office and "PCT International Application"

Applicant's or Agent's File Reference (indicated by applicant if desired)

Box No. I TITLE OF INVENTION

Box No. II APPLICANT (WHETHER OR NOT ALSO INVENTOR); DESIGNATED STATES FOR WHICH HE/SHE/IT IS **APPLICANT.** Use this box for indicating the applicant or, if there are several applicants, one of them. If more than one person (includes, where applicable, a legal entity) is involved, continue in Box No. III.

The person identified in this box is (check one only): ☐ applicant and inventor* ☐ applicant only

Name *and* address:**

Telephone number: (including area code)

Telegraphic address:

Teleprinter address:

Country of nationality:

Country of residence:***

The person identified in this box is *applicant* for the purposes of (check one only):

☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the "Supplemental Box"

Box No. III FURTHER APPLICANTS, IF ANY; (FURTHER) INVENTORS, IF ANY; DESIGNATED STATES FOR WHICH THEY ARE APPLICANTS (IF APPLICABLE). A separate sub-box has to be filled in in respect of each person (includes, where applicable, a legal entity). If the following two sub-boxes are insufficient, continue in the "Supplemental Box," (giving there for each additional person the same indications as those requested in the following two sub-boxes) or by using a "continuation sheet."

The person identified in this sub-box is (check one only): ☐ applicant and inventor* ☐ applicant only ☐ inventor only*

Name *and* address:**

If the person identified in this sub-box is *applicant (or applicant and inventor)*, indicate also:

Country of nationality: Country of residence:***

and whether that person is *applicant* for the purposes of (check one only):

☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the "Supplemental Box"

The person identified in this sub-box is (check one only): ☐ applicant and inventor* ☐ applicant only ☐ inventor only*

Name *and* address:**

If the person identified in this sub-box is *applicant (or applicant and inventor)*, indicate also:

Country of nationality: Country of residence:***

and whether that person is *applicant* for the purposes of (check one only):

☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the "Supplemental Box"

* If the person indicated as "applicant and inventor" or as "inventor only" is not an *inventor* for the purposes of all the designated States, give the necessary indications in the "Supplemental box."

** Indicate the name of a natural person by giving his/her family name first followed by the given name(s). Indicate the name of a legal entity by its full official designation. In the address, include both the postal code (if any) and the country (name).

*** If residence is not indicated, it will be assumed that the country of residence is the same as the country indicated in the address.

Sheet number.....

Box No. III CONTINUATION (IF REQUIRED) FURTHER APPLICANTS, IF ANY; (FURTHER) INVENTORS, IF ANY; DESIGNATED STATES FOR WHICH THEY ARE APPLICANTS (IF APPLICABLE). A separate sub-box has to be filled in in respect of each person (includes, where applicable, a legal entity).

The person identified in this sub-box is (check one only): ☐ applicant and inventor* ☐ applicant only ☐ inventor only*

Name *and* address:**

If the person identified in this sub-box is *applicant (or applicant and inventor)*, indicate also:

Country of nationality: Country of residence:***

and whether that person is *applicant* for the purposes of (check one only):

☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the "Supplemental Box"

The person identified in this sub-box is (check one only): ☐ applicant and inventor* ☐ applicant only ☐ inventor only*

Name *and* address:**

If the person identified in this sub-box is *applicant (or applicant and inventor)*, indicate also:

Country of nationality: Country of residence:***

and whether that person is *applicant* for the purposes of (check one only):

☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the "Supplemental Box"

The person identified in this sub-box is (check one only): ☐ applicant and inventor* ☐ applicant only ☐ inventor only*

Name *and* address:**

If the person identified in this sub-box is *applicant (or applicant and inventor)*, indicate also:

Country of nationality: Country of residence:***

and whether that person is *applicant* for the purposes of (check one only):

☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the "Supplemental Box"

The person identified in this sub-box is (check one only): ☐ applicant and inventor* ☐ applicant only ☐ inventor only*

Name *and* address:**

If the person identified in this sub-box is *applicant (or applicant and inventor)*, indicate also:

Country of nationality: Country of residence:***

and whether that person is *applicant* for the purposes of (check one only):

☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the "Supplemental Box"

* If the person indicated as "applicant and inventor" or as "inventor only" is not an *inventor* for the purposes of all the designated States, give the necessary indications in the "Supplemental box."

** Indicate the name of a natural person by giving his/her family name first followed by the given name(s). Indicate the name of a legal entity by its full official designation. In the address, include both the postal code (if any) and the country (name).

*** If residence is not indicated, it will be assumed that the country of residence is the same as the country indicated in the address.

If this continuation sheet is not used, it need not be included in the Request.

Sheet number .....

Box No. IV AGENT (IF ANY) OR COMMON REPRESENTATIVE (IF ANY); ADDRESS FOR NOTIFICATIONS (IN CERTAIN CASES) A common representative may be appointed only if there are several applicants and if no agent is or has been appointed; the common representative must be one of the applicants.

The following person (includes, where applicable, a legal entity) is hereby/has been appointed as agent or common representative to act on behalf of the applicant(s) before the competent International Authorities:

Name *and* address, including postal code and country (if the space below is used instead for an address for notifications*, check here ☐):

Telephone number: (including area code) Telegraphic address: Teleprinter address:

Box No. V DESIGNATION OF STATES; POSSIBLE CHOICE OF EUROPEAN PATENT; POSSIBLE CHOICES OF CERTAIN KINDS OF PROTECTION OR TREATMENT. Where the name of a State is followed by two check boxes, either or both of the boxes may be checked. The checking of both boxes results in both a European and a national patent being requested for the same State. Designation of Switzerland includes designation of Liechtenstein (and vice-versa).

The following States are hereby designated:***		European Patent		National Patent (if other national title or treatment desired, specify)**	
AT	Austria	☐	—	☐	** .....
AU	Australia			☐	** .....
BR	Brazil			☐	** .....
CH and LI	Switzerland and Liechtenstein	☐	—	☐	
DE	Federal Republic of Germany	☐	—	☐	** .....
DK	Denmark			☐	
FI	Finland			☐	
FR	France	☐	[no national title available]		
GB	United Kingdom	☐	—	☐	
HU	Hungary			☐	

JP	Japan			☐	**
KP	Democratic People's Republic of Korea			☐	
LU	Luxembourg		☐	☐	**
MC	Monaco			☐	**
MG	Madagascar			☐	
MW	Malawi			☐	**
NL	Netherlands		☐	☐	
NO	Norway			☐	
RO	Romania			☐	
SE	Sweden		☐	☐	
SU	Soviet Union			☐	**
US	United States of America			☐	**
EP	all PCT Contracting States for which a European patent may be requested		☐ ****	these States are those listed above whose names are preceded by the codes AT, CH and LI, DE, FR, GB, LU, NL and SE and (specify names of any others)	
OA	OAPI (Cameroon, Central African Republic, Chad, Congo, Gabon, Senegal, Togo)		☐	**OAPI Patent** (if other OAPI title desired, specify)**	

Space reserved for designating countries which become party to the PCT after the issuance of the present form (October 1, 1981):

* An address for the sending of notifications for a sole applicant or for a common representative may be indicated if no agent has been appointed to represent the applicant or, if there are several applicants, all of them.

** If another kind of protection or a title of addition is desired or if, in the United States of America, treatment as a continuation or a continuation in part is desired, indicate according to the instructions given in the Notes to Box No. V.

*** The applicant's choice of the order of the designations may be indicated by checking the boxes of the designated States with sequential arabic numerals (see also the Notes to Box No. V).

**** When this box is checked, none of the other boxes in the column "European patent" should be checked.

See notes on accompanying sheet

Sheet number.....

Supplemental Box. Use this box in the following cases:

(i) *if more than three persons are involved as applicants and/or inventors;* in such case, write "Continuation of Box No. III" and indicate for each additional person the same type of information as required in Box No. III;

(ii) *if, in Box No. II or any of the sub-boxes of Box No. III, the indication "the States indicated in the 'Supplemental Box,' is checked;* in such case, write "Continuation of Box No. II" or "Continuation of Box No. III" or "Continuation of Boxes No. II and No. III" (as the case may be), indicate the name of the applicant(s) involved and, next to (each) such name, the country or countries (or EP or OA, if applicable) for the purposes of which he/she/it is applicant;

(iii) *if, in Box No. II or any of the sub-boxes of Box No. III, a person indicated as "applicant and inventor" or "inventor only" is not inventor for the purposes of all designated States or for the purposes of the United States of America;* in such case, write "Continuation of Box No. II" or "Continuation of Box No. III" or "Continuation of Boxes No. II and No. III" (as the case may be), indicate the name of the inventor and, next to such name, the country or countries (or EP or OA, if applicable) for the purposes of which the named person is inventor;

(iv) *if there is more than one agent and their addresses are not the same;* in such case, write "Continuation of Box No. IV" and indicate for each additional agent the same type of information as required in Box No. IV;

(v) *if, in Box No. V, the name of any country (or OAPI) is accompanied by the indication "patent of addition," "certificate of addition," or "inventor's certificate of addition," or if, in Box No. V, the name of the United States of America is accompanied by an indication "Continuation" or "Continuation in part";* in such case, write "Continuation of Box No. V" and the name of each country involved (or OAPI), and after the name of each such country (or OAPI), the number of the parent title or parent application and the date of grant of parent title or filing of parent application;

(vi) *if there are more than three earlier applications whose priority is claimed;* in such case, indicate "Continuation of Box No. VI" and indicate for each additional earlier application the same type of information as required in Box No. VI;

(vii) *if, in any of the Boxes, the space is insufficient to furnish all the information;* in such case, write "Continuation of Box No. ..." [indicate the number of the Box] and furnish the information in the same manner as required according to the captions of the Box in which the space was insufficient.

If this Supplemental Box is not used, this sheet need not be included in the Request.

Sheet number.....

Box No. VI PRIORITY CLAIM (IF ANY). The priority of the following earlier application(s) is hereby claimed:

Country (country in which it was filed if national application; one of the countries for which it was filed if regional or international application)	Filing Date (day, month, year)	Application No.	Office of Filing (fill in only if the earlier application is an international application or a regional application)
(1)			
(2)			
(3)			

(Letter codes may be used to indicate country and/or Office of filing)

When the earlier application was filed with the Office which, for the purposes of the present international application, is the receiving Office, the applicant may, *against payment of the required fee,* ask the following:

☐ the receiving Office is hereby requested to prepare and transmit to the International Bureau a certified copy of the above-mentioned earlier application/of the earlier applications identified above by the numbers (insert the applicable numbers)

.....

Box No. VII EARLIER SEARCH (IF ANY). Fill in where a search (international, international-type or other) by the International Searching Authority has already been requested (or completed) and the said Authority is now requested to base the international search, to the extent possible, on the results of the said earlier search. Identify such search or request either by reference to the relevant application (or the translation thereof) or by reference to the search request.

International application number or number and country (or regional Office) of other application:

International/regional/national filing date

Date of request for search:

Number (if available) given to search request:

Box No. VIII SIGNATURE OF APPLICANT(S) OR AGENT

If the present Request form is signed on behalf of any applicant by an agent, a separate power of attorney appointing the agent and signed by the applicant is required. If in such case it is desired to make use of a general power of attorney (deposited with the receiving Office), a copy thereof must be attached to this form.

Box No.IX CHECK LIST (To be filled in by the Applicant)

This international application contains the following number of sheets:

1.	request _____	sheets
2.	description _____	sheets
3.	claims _____	sheets
4.	abstract _____	sheets
5.	drawings _____	sheets
	Total	sheets

Figure number ..... of the drawings (if any) is suggested to accompany the abstract for publication.

This international application as filed is accompanied by the items checked below:

1. ☐ separate signed power of attorney
2. ☐ copy of general power of attorney
3. ☐ priority document(s) (see Box No. VI)
4. ☐ receipt of the fees paid or revenue stamps
5. ☐ cheque for the payment of fees
6. ☐ request to charge deposit account
7. ☐ other document (specify)

(The following is to be filled in by the receiving Office)

1. Date of actual receipt of the purported international application:
2. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:
3. Date of timely receipt of the required corrections under Article 11 of the PCT:
4. Drawings ☐ Received ☐ No Drawings

(The following is to be filled in by the International Bureau)

Date of receipt of the record copy:

Form PCT/RO/101 (last sheet) (October 1981) See notes on accompanying sheet

NOTES TO THE REQUEST FORM (PCT/RO/101)

These Notes are intended to facilitate the filling in of the request form. For authentic information, see the text of the Patent Cooperation Treaty and the texts of the Regulations and the Administrative Instructions under that Treaty. (See also the **PCT Applicant's Guide**, a publication of WIPO.) In case of discrepancy between these Notes and the said texts, the latter are applicable.

"Article" refers to Articles of the Treaty, "Rule" refers to Rules of the Regulations and "Section" refers to Sections of the Administrative Instructions.

MANDATORY AND OPTIONAL CONTENTS OF THE REQUEST

"The request shall contain:

(i) a petition [*already pre-printed on the request form*],
(ii) the title of the invention,
(iii) indications concerning the applicant and the agent, if there is an agent,
(iv) the designation of States,
(v) indications concerning the inventor where the national law of at least one of the designated States requires that the name of the inventor be furnished at the time of filing a national application." **(Rule 4.1(a))**

"The request shall, where applicable, contain:

(i) a priority claim,
(ii) a reference to any earlier international, international-type or other search,
(iii) choices of certain kinds of protection,
(iv) an indication that the applicant wishes to obtain a regional patent and the names of the designated States for which he wishes to obtain such a patent,
(v) a reference to a parent application or parent patent." **(Rule 4.1(b))**

"The request may contain:

(i) indications concerning the inventor where the national law of none of the designated States requires that the name of the inventor be furnished at the time of filing a national application,
(ii) a request to the receiving Office to transmit the priority document to the International Bureau where the application whose priority was claimed was filed with the national Office or intergovernmental authority which is the receiving Office." **(Rule 4.1(c))**

"The request shall be signed." **(Rule 4.1(d))**

NOTES TO BOX No. I

Title of Invention. "The title of the invention shall be short (preferably from two to seven words when in English or translated into English) and precise." **(Rule 4.3)**

NOTES TO BOXES No. II and III

Applicant. "The request shall indicate the name, address, nationality and residence of the applicant or, if there are several applicants, of each of them." **(Rule 4.5(a))**

Different Applicants for Different Designated States. "The international application may indicate different applicants for the purposes of different designated States, provided that, in respect of each designated State, at least one of the applicants indicated for the purposes of that State is entitled to file an international application according to Article 9 [i.e., is a national or resident of a Contracting State]." **(Rule 18.4(a))** *Where the United States of America is one of the designated States the applicant or applicants named in respect of the United States of America must be the inventor or inventors.*

Inventor. "The request shall contain ..... the name of and other prescribed data concerning the inventor where the national law of at least one of the designated States requires that these indications be furnished at the time of filing a national application ....." **(Article 4(1)(v))** "Where Rule 4.1(a)(v) applies, the request shall indicate the name and address of the inventor or, if there are several inventors, of each of them." **(Rule 4.6(a))** "If the applicant is the inventor, the request, in lieu of the indication under paragraph (a), shall contain a statement to that effect **(Rule 4.6(b))** "..... Where the national law of the designated State requires the indication of the name of and other prescribed data concerning the inventor but allows that these indications be furnished at a time later than that of the filing of a national application, the applicant shall, unless they were contained in the request, furnish the said indications to the national Office of or acting for that State not later than at the expiration of 20 months from the priority date." **(Article 22(1))**

Names. "Names of natural persons shall be indicated by the person's family name and given name(s), the family name being indicated before the given name(s)." **(Rule 4.4(a))** "Names of legal entities shall be indicated by their full, official designations." **(Rule 4.4(b))**

Addresses. "Addresses shall be indicated in such a way as to satisfy the customary requirements for prompt postal delivery at the indicated address and, in any case, shall consist of all the relevant administrative units up to, and including, the house number, if any. Where the national law of the designated State does not require the indication of the house number, failure to indicate such number shall have no effect in that State. It is recommended to indicate any telegraphic and teleprinter address and telephone number in respect of the agent or common representative or, in the absence of the designation of an agent or common representative in the request, of the applicant first named in the request." **(Rule 4.4(c))** "For each applicant, inventor, or agent, only one address may be indicated....." **(Rule 4.4(d))** *See, however, the Notes to Box No. IV as to the indication, in that Box, in certain cases, of an "address for notifications" for the applicant.*

Nationality. "The applicant's nationality shall be indicated by the name of the State of which he is a national." **(Rule 4.5(b))**

Residence. "The applicant's residence shall be indicated by the name of the State of which he is a resident." **(Rule 4.5(c))**

Names of States. "The name of any State referred to in the request shall be indicated by the full name of the State or by a generally accepted short title which, if the indications are in English or French shall be as appears in Annex A [i.e., Annex A to the Administrative Instructions under the PCT; the pre-printed names of PCT Contracting States appearing in Box No. V of the request form are in accordance with the said Annex A]." **(Section 201(a), first sentence)**

NOTES TO BOX No. IV

Agent or Common Representative. *When listing several agents, list first the agent to whom it is desired that any correspondence shall be addressed.* **(See Section 108)** "If agents are designated, the request shall so indicate, and shall state their names and addresses." **(Rule 4.7)** "If there is more than one applicant and the request does not refer to an agent representing all the applicants ("a common agent"), the request shall designate one of the applicants who is entitled to file an international application according to Article 9 [i.e., is a national or resident of a Contracting State] as their common representative." **(Rule 4.8(a))**

Appointment of Agent or Common Representative. "Appointment of any agent, or of any common representative within the meaning of Rule 4.8(a), shall be effected by each applicant, at his choice, either by signing the request in which the agent or common representative is designated or by a separate power of attorney (i.e., a document appointing an agent or common representative)." **(Rule 90.3(a))** "Where the international application is filed with reference to a general power of attorney not signed by all the applicants, it shall be sufficient for the purpose of appointment of a common agent under Rule 90.3, if the request or a separate power of attorney is signed by the applicant, who did not sign the general power of attorney." **(Section 106(b))**

Address for Notifications. *An address to which notifications may be sent to the (sole) applicant or the common representative, when no agent has been appointed, may be indicated in Box No. IV instead of the name and address of an agent:* "For each applicant ....., only one address may be indicated except that, if no agent has been appointed to represent the applicant, or all of them if more than one, the applicant or, if there is more than one applicant, the common representative, may indicate, in addition to any other address given in the request, an address to which notifications may be sent." **(Rule 4.4(d))**

For **Names** *(including* **Names of States***) and* **Addresses**, *see Notes to Boxes Nos. II and III.*

NOTES TO BOX No. V

Designation of States. "Contracting States shall be designated in the request by their names." **(Rule 4.9)** *Note that after filing further designations cannot be made.*

The checking of the boxes of the designated States by means of sequential arabic numerals will be taken as indicating the applicant's choice of the order of the designations; if another form of checking is used, the order will be taken as that in which the checked boxes appear on the form. This order will only have any significance if the amount received for the designation fees is insufficient to cover all the designations. In that case, the amount received will be applied in payment of the fees for the designations following the said order. **(See Section 208 and Rules 16bis.2(c) and 16bis.3(b))**

Where one or more States are designated twice (once for the purposes of a European patent and once for the purposes of a national patent), one designation fee must be paid in respect of the European patent and as many designation fees must be paid in respect of the national patents as there are designated States. **(See Section 203bis and Rule 15.1(ii))**

Possible Choices of Certain Kinds of Protection or Treatment. *If, in any country where that is possible, instead of a patent, a national title other than a patent is desired, write after the box of that country, the name of the title, that is, "petty patent" (available in Australia), "utility model" (available in Brazil, the Federal Republic of Germany, Japan and OAPI) or "inventor's certificate" (available in the Soviet Union). Where, in the Federal Republic of Germany (only country in which these possibilities exist), in addition to a patent, a utility model is also desired, write, after the box of that country* **"and utility model"** *or, where subsidiarily to a patent a utility model is desired, write, after the said box* **"and auxiliary utility model".** **(See Section 202)**

Where, in respect of any country where that is possible, it is desired that the application be treated as an application for a certain title "of addition" or as an application for a continuation or a continuation in part, write after the box of that country, the appropriate words, that is, "patent of addition" (available in Australia, Austria, the Federal Republic of Germany, Japan, Malawi, Soviet Union), "certificate of addition" (available in Luxembourg, Monaco, OAPI), "inventor's certificate of addition" (available in the Soviet Union), "continuation" or "continuation in part" (both available in the United States of America). **If any of these indications is used, indicate in the "Supplemental Box" the country for which such treatment is desired, the number of the parent title or parent application and the date of grant of the parent title or the date of filing of the parent application, as the case may be.**

For Names of States, *see Notes to Boxes Nos. II and III.*

NOTES TO BOX No. VI

Priority claim "The declaration [containing the priority claim] shall be made in the request; it shall ..... indicate:

(i) when the earlier application is not a regional or an international application, the country in which it was filed; when the earlier application is a regional or an international application, the country or countries for which it was filed,
(ii) the date on which it was filed,
(iii) the number under which it was filed, and
(iv) when the earlier application is a regional or an international application, the national Office or intergovernmental organization with which it was filed." **Rule 4.10(a))**

"If the request does not indicate both

(i) when the earlier application is not a regional or an international application, the country in which it was filed; when the earlier application is a regional or an international application, at least one country for which it was filed, and
(ii) the date on which it was filed,

the priority claim shall, for the purposes of the procedure under the Treaty, be considered not to have been made ....." **(Rule 4.10(b))**

"If the application number of the earlier application is not indicated in the request but is furnished by the applicant to the International Bureau prior to the expiration of the 16th month from the priority date, it shall be considered by all designated States to have been furnished in time ....." **(Rule 4.10(c), first sentence)**

Certified Copy of Earlier Application. "Where the priority of an earlier national application is claimed under Article 8 in the international application, a copy of the said national application, certified by the authority with which it was filed ("the priority document"), shall, unless already filed with the receiving Office together with the international application, be submitted by the applicant to the International Bureau or to the receiving Office not later than 16 months after the priority date or, in the case referred to in Article 23(2), not later than at the time the processing or examination is requested ....." **(Rule 17.1(a), first sentence)** "Where the priority document is issued by the receiving Office, the applicant may, instead of submitting the priority document, request the receiving Office to transmit the priority document to the International Bureau. Such request shall be made not later than the expiration of the applicable time limit referred to under paragraph (a) and may be subjected by the receiving Office to the payment of a fee ....." **(Rule 17.1(b))**

Dates. "Any date in the international application, or used in any correspondence emanating from International Authorities relating to the international application, shall be indicated by the Arabic number of the day, by the name of the month, and by the Arabic number of the year." **(See Section 110)**

NOTES TO BOX No. VII

Earlier Search. "If an international or international-type search has been requested on an application under Article 15(5) or if the applicant wishes the International Searching Authority to base the international search report wholly or in part on the results of a search, other than an international or international-type search, made by the national Office or intergovernmental organization which is the International Searching Authority competent for the international application, the request shall contain a reference to that fact. Such reference shall either identify the application (or its translation, as the case may be) in respect of which the earlier search was made by indicating country, date and number, or the said search by indicating, where applicable, date and number of the request for such search." **(Rule 4.11)**

For **Dates,** *see Notes to Box No. VI.*

NOTES TO BOX No. VIII

Signature. *The signature (Rule 4.1(d)) must be that of the applicant (if there are several applicants all must sign (Rule 4.15)); however, the signature may be that of the agent (Rule 2.1) where there is attached to the request a separate power of attorney appointing the agent or the copy of a general power of attorney already in the possession of the receiving Office. The typing of the name of each person signing the Request below the signature is recommended; similarly, an indication of the capacity in which the person signs is recommended if such capacity is not obvious from a reading of the Request.*

For **Power of Attorney** *and* **General Power of Attorney,** *see Notes to Box No. IX.*

NOTES TO BOX No. IX

Check List (*in general,* **see Rule 3.3)**

Power of Attorney. "The power of attorney may be submitted to the receiving Office or the International Bureau." **(Rule 90.3(b))** "If the separate power of attorney is not signed ..... or ..... is missing, or if the indication of the name or address of the appointed person does not comply with Rule 4.4, the power of attorney shall be considered nonexistent unless the defect is corrected." **(Rule 90.3(c))**

General Power of Attorney. "A general power of attorney may be deposited with the receiving Office for purposes of the processing of the international application as defined in Rule 90.2(d). Reference may be made in the request to such general power of attorney, provided that a copy thereof is attached to the request by the applicant." **(Rule 90.3(d))**

Optional Sheet. *The optional sheet containing indications concerning deposited microorganisms may, in most cases, be listed as an "other document." This is not the case if Japan is designated since the optional sheet is accepted in that case only if included in the sheets of the description.*

NOTES TO "SUPPLEMENTAL BOX"

Different Inventors for Different (Groups of) Designated States. "The request may, for different designated States, indicate different persons as inventors where, in this respect, the requirements of the national laws of the designated States are not the same. In such a case, the request shall contain a separate statement for each designated State or group of States in which a particular person, or the same person, is to be considered the inventor, or in which particular persons, or the same persons, are to be considered the inventors." **(Rule 4.6(c))**

Parent Application or Grant. "If the applicant wishes his international application to be treated, in any designated State, as an application for a patent or certificate of addition, inventor's certificate of addition, or utility certificate of addition, he shall identify the parent application or the parent patent, parent inventor's certificate, or parent utility certificate to which the patent or certificate of addition, inventor's certificate of addition, or utility certificate of addition, if granted, relates. For the purposes of this paragraph Article 2(ii) shall not apply." **(Rule 4.13)** "If the applicant wishes his international application to be treated, in any designated State, as an application for a continuation or a continuation-in-part of an earlier application, he shall so indicate in the request and shall identify the parent application involved." **(Rule 4.14)**

THIS SHEET DOES NOT COUNT AS A PAGE OF THE INTERNATIONAL APPLICATION

APPLICANT		DOCKET NUMBER	This column for use by receiving Office
RO/US RECEIPT DATE	INTERNATIONAL APPLICATION NUMBER	SUBMISSION DATE	

UNITED STATES RECEIVING OFFICE
FEE CALCULATION SHEET

FEES SUBMITTED OR AUTHORIZED:

I. TRANSMITTAL FEE ..... [ ] T

II. SEARCH FEE ..... [ ] S

III. INTERNATIONAL FEE

BASIC FEE

Indicate the number of SHEETS contained in the international application _____.

first 30 sheets ..... [ ] b_1

remaining _____ sheets X $ _____ = [ ] b_2
(multiply excess over 30 by amount of supplement to Basic Fee)

Add amounts entered in boxes b_1 and b_2 and enter total in box B.

This figure is the amount of the BASIC FEE..... [ ] B

DESIGNATION FEES

Indicate the number of DESIGNATED STATES for which National patents have been sought and multiply by the amount of the designation fee _____ X $ _____ = [ ] d_1

Indicate the number of GROUPS of designated States for which regional patents have been sought and multiply by the amount of the designation fee _____ X $ _____ = [ ] d_2

—Note instructions regarding the application of designation fees below—

Add amounts entered in boxes d_1 and d_2 and enter total in box D.

This figure is the amount of the DESIGNATION FEES ..... [ ] D

Add amounts entered in boxes B and D, and enter total in box I.
This figure is the amount of the INTERNATIONAL FEE..... | I |

IV. TOTAL FEES SUBMITTED OR AUTHORIZED:

Add amounts entered in boxes T, S and I, and enter total in the total box. This figure is the total amount of the FEES SUBMITTED or AUTHORIZED..... | TOTAL |

Payment must be made in United States currency. Checks, postal money orders or bank drafts must be made payable to the Commissioner of Patents and Trademarks. Payment may also be made by authorization to charge to a Patent and Trademark Office deposit account.

DEPOSIT ACCOUNT AUTHORIZATION

☐ The RO/US is hereby authorized to charge the total fees indicated above to my deposit account.

☐ The RO/US is hereby authorized to charge any deficiency or credit any overpayment in the total fees indicated above to my deposit account.

Deposit Account Number *Date* *Signature*

INSTRUCTIONS REGARDING DESIGNATION FEES: *(See reverse side for list of member States)*

Use the space below to indicate, in order, those countries for which the designation fees submitted or authorized are to be applied. Include after the name of the country any indication that a regional patent is sought. If no countries are indicated below, the RO/US will apply the designation fees submitted or authorized to the designated countries in the order in which those countries are listed in the Request.

Form PCT/RO/101 (Annex) (U.S. Version)
U.S. DEPARTMENT OF COMMERCE - Patent and Trademark Office

SAMPLE (filed 01 October 1981)

INTERNATIONAL APPLICATION UNDER THE PATENT COOPERATION TREATY

REQUEST

THE UNDERSIGNED REQUESTS THAT THE PRESENT INTERNATIONAL APPLICATION BE PROCESSED ACCORDING TO THE PATENT COOPERATION TREATY

(The following is to be filled in by the receiving Office)
INTERNATIONAL APPLICATION No:
INTERNATIONAL FILING DATE:
(Stamp) Name of receiving Office and "PCT International Application"
Applicant's or Agent's File Reference (indicated by applicant if desired) PCT-1

Box No. I TITLE OF INVENTION

A SELF-LOCKING PIPE CLAMP FOR FIELD WELDING

Box No. II APPLICANT (WHETHER OR NOT ALSO INVENTOR): DESIGNATED STATES FOR WHICH HE/SHE/IT IS APPLICANT. Use this box for indicating the applicant or, if there are several applicants, one of them. If more than one person (includes, where applicable, a legal entity) is involved, continue in Box No. III.

The person identified in this box is (check one only): ☐ applicant and inventor* ☒ applicant only

Name *and* address:**

XYZABC COMPANY, INC., a corporation of the Commonwealth of Pennsylvania
Suite 1000
4500 Mason-Dixon Street
Anytown, Pennsylvania 16000
United States of America

Telephone number (including area code): (412) 555-1212 Telegraphic address: 123-456 Teleprinter address: 123-456-7890

Country of nationality: United States of America Country of residence:*** United States of America

The person identified in this box is *applicant* for the purposes of (check one only):

☐ all designated States ☒ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the "Supplemental Box"

Box No. III FURTHER APPLICANTS, IF ANY; (FURTHER) INVENTORS, IF ANY; DESIGNATED STATES FOR WHICH THEY ARE APPLICANTS (IF APPLICABLE). A separate sub-box has to be filled in in respect of each person (includes, where applicable, a legal entity). If the following two sub-boxes are insufficient, continue in the "Supplemental Box," (giving there for each additional person the same indications as those requested in the following two sub-boxes) or by using a "continuation sheet."

The person identified in this sub-box is (check one only): ☒ applicant and inventor* ☐ applicant only ☐ inventor only*

Name *and* address:**

Doe, John A.
4512 Milford Boulevard
Smithtown, North Dakota 00000
United States of America

If the person identified in this sub-box is *applicant (or applicant and inventor)*, indicate also:

Country of nationality: United States of America Country of residence:*** United States of America

and whether that person is *applicant* for the purposes of (check one only):

☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the "Supplemental Box"

The person identified in this sub-box is (check one only): ☒ applicant and inventor* ☐ applicant only ☐ inventor only*

Name *and* address:**

Smith, R. Thomas, Jr.
123 South 40th Street
Smithtown, North Dakota 00000
United States of America

If the person identified in this sub-box is *applicant (or applicant and inventor)*, indicate also:

Country of nationality: United States of America Country of residence:*** United States of America

and whether that person is *applicant* for the purposes of (check one only):

☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the "Supplemental Box"

* If the person indicated as "applicant and inventor" or as "inventor only" is not an *inventor* for the purposes of all the designated States, give the necessary indications in the "Supplemental box."

** Indicate the name of a natural person by giving his/her family name first followed by the given name(s). Indicate the name of a legal entity by its full official designation. In the address, include both the postal code (if any) and the country (name).

*** If residence is not indicated, it will be assumed that the country of residence is the same as the country indicated in the address.

PRINT MISSING ON PAGE 111, BEST COPY AVAILABLE FOR PHOTOGRAPHY.

Box No. IV AGENT (IF ANY) OR COMMON REPRESENTATIVE; ADDRESS FOR NOTIFICATIONS (IN CERTAIN CASES) A common representative may be appointed only if there are several applicants and if no agent is or has been appointed; the common representative must be one of the applicants.

The following person (includes, where applicable, a legal entity) is hereby/has been appointed as agent or common representative to act on behalf of the applicant(s) before the competent International Authorities:

Name *and* address, including postal code and country (if the space below is used instead for an address for notifications*, check here ☐):

Miller George A.
Miller and Washington
4900 Mason-Dixon Street
Anytown, Pennsylvania 16000
United States of America

Telephone number (including area code): (412) 555-1212 Telegraphic address: 792-146 Teleprinter address: 987-654-3210

Box No. V DESIGNATION OF STATES; POSSIBLE CHOICE OF EUROPEAN PATENT; POSSIBLE CHOICES OF CERTAIN KINDS OF PROTECTION OR TREATMENT. Where the name of a State is followed by two check boxes, either or both of the boxes may be checked. The checking of both boxes results in both a European and a national patent being requested for the same State. Designation of Switzerland includes designation of Liechtenstein (and vice-versa).

The following States are hereby designated:***		European Patent		National Patent (if other national title or treatment desired, specify:)**	
AT	Austria	☐	—	☐	**
AU	Australia			☐	**
BR	Brazil			☒	**
CH and LI	Switzerland and Liechtenstein	☒	—	☐	
DE	Federal Republic of Germany	☒	—	☒	** and auxiliary utility model
DK	Denmark			☐	
FI	Finland			☐	
FR	France	☒	[no national title available]		
GB	United Kingdom	☒	—	☐	
HU	Hungary			☐	
JP	Japan			☒	** Utility Model
KP	Democratic People's Republic of Korea			☐	
LU	Luxembourg	☐	—	☐	**
MC	Monaco			☐	**
MG	Madagascar			☐	
MW	Malawi			☒	**
NL	Netherlands	☐	—	☐	
NO	Norway			☐	
RO	Romania			☐	
SE	Sweden	☐	—	☒	
SU	Soviet Union			☒	**
US	United States of America			☒	** Continuation-in-part
EP	all PCT Contracting States for which a European patent may be requested	☐	****	these States are those listed above whose names are preceded by the codes AT, CH and LI, DE, FR, GB, LU, NL and SE and (specify names of any others)	
OA	OAPI (Cameroon, Central African Republic, Chad, Congo, Gabon, Senegal, Togo)	☒		OAPI Patent (if other OAPI title desired, specify)**	

Space reserved for designating countries which become party to the PCT after the issuance of the present form (October 1, 1981):

* An address for the sending of notifications for a sole applicant or for a common representative may be indicated if no agent has been appointed to represent the applicant or, if there are several applicants, all of them.

** If another kind of protection or a title of addition is desired or if, in the United States of America, treatment as a continuation or a continuation in part is desired, indicate according to the instructions given in the Notes to Box No. V.

*** The applicant's choice of the order of the designations may be indicated by checking the boxes of the designated States with sequential arabic numerals (see also the Notes to Box No. V).

**** When this box is checked, none of the other boxes in the column "European patent" should be checked.

Sheet number 3

Supplemental Box. Use this box in the following cases:

(i) *If more than three persons are involved as applicants and/or inventors:* in such case, write "Continuation of Box No. III" and indicate for each additional person the same type of information as required in Box No. III;

(ii) *If, in Box No. II or any of the sub-boxes of Box No. III, the indication "the States indicated in the 'Supplemental Box,'" is checked:* in such case, write "Continuation of Box No. II" or "Continuation of Box No. III" or "Continuation of Boxes No. II and No. III" (as the case may be), indicate the name of the applicant(s) involved and, next to (each) such name, the country or countries (or EP or OA, if applicable) for the purposes of which he/she/it is applicant;

(iii) *If, in Box No. II or any of the sub-boxes of Box No. III, a person indicated as "applicant and inventor" or "inventor only" is not inventor for the purposes of all designated States or for the purposes of the United States of America:* in such case, write "Continuation of Box No. II" or "Continuation of Box No. III" or "Continuation of Boxes No. II and No. III" (as the case may be), indicate the name of the inventor and, next to such name, the country or countries (or EP or OA, if applicable) for the purposes of which the named person is inventor;

(iv) *If there is more than one agent and their addresses are not the same:* in such case, write "Continuation of Box No. IV" and indicate for each additional agent the same type of information as required in Box No. IV;

(v) *If, in Box No. V, the name of any country (or OAPI) is accompanied by the indication "patent of addition," "certificate of addition," or "inventor's certificate of addition," or if, in Box No. V, the name of the United States of America is accompanied by an indication "Continuation" or "Continuation in part":* in such case, write "Continuation of Box No. V" and the name of each country involved (or OAPI), and after the name of each such country (or OAPI), the number of the parent title or parent application and the date of grant of parent title or filing of parent application;

(vi) *If there are more than three earlier applications whose priority is claimed:* in such case, indicate "Continuation of Box No. VI" and indicate for each additional earlier application the same type of information as required in Box No. VI;

(vii) *If, in any of the Boxes, the space is insufficient to furnish all the information:* in such case, write "Continuation of Box No. ..." [indicate the number of the Box] and furnish the information in the same manner as required according to the captions of the Box in which the space was insufficient.

Continuation of Box No. IV:

Washington, George A.
Jones, Franklin F.
Johnson, Lawrence P.

All above attorneys are members of the firm of Miller and Washington. Address, etc., of all is as indicated in Box IV.

Continuation of Box No. V:

United States of America
20 May 1981
222,222

If this Supplemental Box is not used, this sheet need not be included in the Request.

Sheet number 4

Box No. VI PRIORITY CLAIM (IF ANY). The priority of the following earlier application(s) is hereby claimed:

Country (country in which it was filed if national application; one of the countries for which it was filed if regional or international application)	Filing Date (day, month, year)	Application No.	Office of Filing (fill in only if the earlier application is an international application or a regional application)
(1) US	20 May 1981	222,222	
(2)			
(3)			

(Letter codes may be used to indicate country and/or Office of filing)

When the earlier application was filed with the Office which, for the purposes of the present international application, is the receiving Office, the applicant may, *against payment of the required fee*, ask the following:

[X] the receiving Office is hereby requested to prepare and transmit to the International Bureau a certified copy of the above-mentioned earlier application/of the earlier applications identified above by the numbers (insert the applicable numbers) 222,222

Box No. VII EARLIER SEARCH (IF ANY). Fill in where a search (international, international-type or other) by the International Searching Authority has already been requested (or completed) and the said Authority is now requested to base the international search, to the extent possible, on the results of the said earlier search. Identify such search or request either by reference to the relevant application (or the translation thereof) or by reference to the search request.

International application number or number and country (or regional Office) of other application: 222,222 United States of America

International/regional/national filing date: 20 May 1981

Date of request for search:

Number (if available) given to search request:

Box No. VIII SIGNATURE OF APPLICANT(S) OR AGENT

Paul A. Jones
Paul A. Jones
Vice-President
XYZABC Company, Inc.

John A. Doe
John A. Doe
R. Thomas Smith Jr.
R. Thomas Smith Jr.

If the present Request form is signed on behalf of any applicant by an agent, a separate power of attorney appointing the agent and signed by the applicant is required. If in such case it is desired to make use of a general power of attorney (deposited with the receiving Office), a copy thereof must be attached to this form.

Box No. IX CHECK LIST (To be filled in by the Applicant)

This international application contains the following number of sheets:

1. request	4	sheets	
2. description	4	sheets	
3. claims	1	sheets	
4. abstract	1	sheets	
5. drawings	1	sheets	
Total	11	sheets	

Figure number 1 of the drawings (if any) is suggested to accompany the abstract for publication.

This international application as filed is accompanied by the items checked below:

1. [ ] separate signed power of attorney
2. [ ] copy of general power of attorney
3. [ ] priority document(s) (see Box No. VI)
4. [ ] receipt of the fees paid or revenue stamps
5. [ ] cheque for the payment of fees
6. [X] request to charge deposit account
7. [X] other document (specify) Transmittal letter

(The following is to be filled in by the receiving Office)

1. Date of actual receipt of the purported international application:
2. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:
3. Date of timely receipt of the required corrections under Article 11 of the PCT:
4. Drawings [ ] Received [ ] No Drawings

(The following is to be filled in by the International Bureau)

Date of receipt of the record copy:

THIS SHEET DOES NOT COUNT AS A PAGE OF THE INTERNATIONAL APPLICATION

APPLICANT	DOCKET NUMBER	This column for use by receiving Office
XYZABC Company, Inc.	PCT-1	
RO/US RECEIPT DATE / INTERNATIONAL APPLICATION NUMBER	SUBMISSION DATE: 01 October 1981	

UNITED STATES RECEIVING OFFICE
FEE CALCULATION SHEET

FEES SUBMITTED OR AUTHORIZED:

I. TRANSMITTAL FEE — 35.00 (T)

II. SEARCH FEE — 300.00 (S)

III. INTERNATIONAL FEE

BASIC FEE

Indicate the number of SHEETS contained in the international application 11.

first 30 sheets — 215.00 (b_1)

remaining ____ sheets X $ ____ = ____ (b_2)
(multiply excess over 30 by amount of supplement to Basic Fee)

Add amounts entered in boxes b_1 and b_2 and enter total in box B.
This figure is the amount of the BASIC FEE — 215.00 (B)

DESIGNATION FEES

Indicate the number of DESIGNATED STATES for which National patents have been sought and multiply by the amount of the designation fee: 2 X $ 50.00 = 100.00 (d_1)

Indicate the number of GROUPS of designated States for which regional patents have been sought and multiply by the amount of the designation fee: 1 X $ 50.00 = 50.00 (d_2)

—Note instructions regarding the application of designation fees below—

Add amounts entered in boxes d_1 and d_2 and enter total in box D.
This figure is the amount of the DESIGNATION FEES — 150.00 (D)

Add amounts entered in boxes B and D, and enter total in box I.
This figure is the amount of the INTERNATIONAL FEE — 365.00 (I)

IV. TOTAL FEES SUBMITTED OR AUTHORIZED:

Add amounts entered in boxes T, S and I, and enter total in the total box. This figure is the total amount of the FEES SUBMITTED or AUTHORIZED — 700.00 TOTAL

Payment must be made in United States currency. Checks, postal money orders or bank drafts must be made payable to the Commissioner of Patents and Trademarks. Payment may also be made by authorization to charge to a Patent and Trademark Office deposit account.

DEPOSIT ACCOUNT AUTHORIZATION

[X] The RO/US is hereby authorized to charge the total fees indicated above to my deposit account.

[X] The RO/US is hereby authorized to charge any deficiency or credit any overpayment in the total fees indicated above to my deposit account.

00-0000	01 Oct. 1981	George A. Miller
Deposit Account Number	*Date*	*Signature*

INSTRUCTIONS REGARDING DESIGNATION FEES: *(See reverse side for list of member States)*

Use the space below to indicate, in order, those countries for which the designation fees submitted or authorized are to be applied. Include after the name of the country any indication that a regional patent is sought. If no countries are indicated below, the RO/US will apply the designation fees submitted or authorized to the designated countries in the order in which those countries are listed in the Request.

United States of America
Brazil
Federal Republic of Germany, Regional Patent

Note: Remainder of fees will be paid at the end of priority year.

Form PCT/RO/101 (Annex) (U.S. Version)
U.S. DEPARTMENT OF COMMERCE - Patent and Trademark Office

PATENT AND TRADEMARK OFFICE NOTICES

(108) **Reduction of European Search Fee for PCT Cases**

The following letter dated December 21, 1979 from Dr. J. B. Van Benthem, the President of the European Patent Office, was received by the Commissioner of Patents and Trademarks and is being published to provide the information to applicants using the Patent Cooperation Treaty (PCT). The effect of the decision of the Administration Council of the European Patent Organization is to reduce the search fee required by the European Patent Office by 20% if the application was filed under the PCT and was searched by the United States Patent and Trademark Office acting as an International Searching Authority.

The letter and accompanying annex are reproduced below.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

"Dear Mr. Diamond:

Pursuant to Article 157, paragraph 3, EPC, the Administrative Council of the European Patent Organization is entitled to decide under what conditions and to what extent:

a) the supplementary European search report under Article 157, paragraph 2a, EPC is to be dispensed with

b) the search fee as provided for in Article 157, paragraph 2b, EPC is to be reduced.

Up to the present, the Administrative Council of the EPO has taken decisions in regard to Article 157, paragraph 3, in respect of international applications for which the international search report has been drawn up by the following Offices: the European Patent Office, the Swedish Patent Office, the Austrian Patent Office, the United States Patent and Trademark Office, the Japanese Patent Office and the USSR State Committee for Inventions and Discoveries.

The decisions concerning the Swedish and Austrian Patent Offices are based on the agreements concluded between these Offices and the EPO pursuant to Section III, paragraph 2 and Section IV, paragraph 2 of the Protocol on the Centralisation of the European Patent System, which is an integral part of the EPC. These agreements prescribe that the searches to be carried out by these Offices are to meet the same criteria and be of the same standard as applied at the EPO.

For these reasons the Administrative Council has decided that in respect of Sweden and Austria the supplementary European search report under Article 157, paragraph 2a, EPC is to be dispensed with and a search fee as provided for in Article 157, paragraph 2b, EPC shall not be charged.

As far as those States are concerned which are not members of the European Patent Organization, the Administrative Council of the EPO decided on 14 September 1979, that the search fee provided for in Article 157, paragraph 2b, EPC, shall be reduced by one-fifth in the case of international applications on which an international search report has been drawn up by the United States Patent and Trademark Office, the Japanese Patent Office or the USSR State Committee for Inventions and Discoveries. This reduction reflects the economy expected to be made in drawing up the supplementary European search report according to EPO standards.

Annexed you will find a copy of the Decision of 14 Sept. 1979. It applies to all international applications filed since 1 June 1979.

Yours sincerely,

J. B. Van Benthem.
(President)."

ANNEX

The Administrative Council of the European Patent Organization

Having regard to the European Patent Convention (hereinafter called "the Convention"), and in particular Article 157, paragraph 3, thereof, Has decided as follows:

Article 1

The search fee provided for in Article 157, paragraph 2(b), of the Convention shall be reduced by one fifth in the case of international applications on which an international search report has been drawn up by the United States Patent and Trademark Office, the Japanese Patent Office or the USSR State Committee for Inventions and Discoveries.

Article 2

This decision shall enter into force on 14 September 1979. It shall apply to all international applications filed since 1 June 1978.

Done at Berlin, 14 Sept. 1979.

For the Administrative Council
The Chairman,
G. VIANES.
END OF ANNEX

[992 O.G. 2]

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[1] See *In re Clark*, 522 F.2d 623, 187 USPQ 209 (CCPA 1975), at footnote 4 where the court declined to decide whether it is proper to seek reissue merely to disclose uncited prior art. See also *In re Altenpohl*, 500 F.2d 1151, 183 USPQ 38 (CCPA 1974)

[2] See *In re Oda*, 443 F. 2d 1200, 170 USPQ 268 (CCPA 1971).

[3] *International Paper Co.* v. *Fibreboard Corp.*, 63 F.R.D. 88, 181 USPQ 740 (D. Del. 1974).

[4] 923 O.G. 2; 930 O.G. 1454; 938 O.G. 945.

[5] 426 U.S. ——, 48 L. Ed. 2d 757, 96 S. Ct. 2126, 44 U.S.L.W. 4852, decided June 14, 1976.

[6] 426 U.S. at ——, 48 L. Ed. 2d at 765, 96 S. Ct. at 2132, 44 U.S.L.W. at 4855.

[7] See discussion accompanying proposed rules in Federal Register of Oct. 4, 1976, page 43731, first sentence.

[8] *Norton* v. *Curtiss*, 433 F. 2d 779, 792, 167 USPQ 532, 543 (CCPA 1970).

[9] E.g., Federal Register of Sept. 9, 1968, 34 FR 14176, 866 O.G. 1402; S. 2255, 94th Congress, §131(b).

[10] Notice of Aug. 12, 1974, 926 O.G. 2.

[11] BNA's Patent, Trademark and Copyright Journal, No. 301, Oct. 28, 1976, page D–1.

[12] 5 USC 552.

[13] *Irons* v. *Gottschalk*, Slip Opinion, No. 74–1365 (D.C. Cir., Oct. 21, 1976).

[14] See notice of Mar. 20, 1975, 933 O.G. 1010.

[15] MPEP, §1209.

[16] See notice of Mar. 20, 1975, 933 O.G. 1010.

TRADEMARK NOTICES

(109) Interviews Involving Trademark Application

Interviews frequently result in a better understanding of the issues involved, shorten the prosecution and facilitate disposal of applications.

Interviews for discussion of registrability of the mark of a pending application will not be had before the first official Office action thereon and ordinarily not before filing the first response. Arrangements for an interview should be made in advance so that the Examiner may review the case and be familiar with the details involved.

Interviews on Friday will no longer be prohibited as a matter of policy but all interviews should be set at a time satisfactory to all parties concerned.

A memorandum summarizing the conclusions reached at the interview should be prepared by the Examiner and placed in the application file. The memorandum will be retained in the application file until the prosecution is completed. Such procedure will not, however, relieve the applicant of the responsibility of complying with the requirements of Trademark Rule 2.62.

HORACE B. FAY, JR.,
July 6, 1964. *Assistant Commissioner.*

This supersedes the notice of Feb. 10, 1958, 728 O.G. (TM 1).

[804 O.G. TM 147]

(110) Powers of Attorney in Registered Trademark Files

On and after Feb. 1, 1967, communications advising of changes in the powers of attorney for registered trademarks will be placed in the registration files, but will not be acknowledged by the Patent Office. The information will thus be available to those who inspect the files, but since these powers of attorney do not directly concern the Patent Office, acknowledgments are not believed to be necessary.

C.M. WENDT,
Jan. 30, 1967. *Director.*

(111) Request for Extension of Time in which to Oppose

The Patent Office is adopting a new procedure to be used when filing a request for an extension of time in which to oppose under Section 13 of the Trademark Act and Rule 2.102, Trademark Rules of Practice. All requests for extension of time should be submitted in triplicate. The Patent Office will stamp each copy of the request with the action taken and send a copy to the requester and the applicant. The third copy will be entered in the file.

The purpose of this new procedure is to expedite the handling of extensions of time by eliminating the preparation of a formal notice of the disposition of the request. Further, this procedure will provide the applicant with additional information concerning the potential opposition.

WILLIAM E. SCHUYLER, Jr.,
June 16, 1971. *Commissioner of Patents.*

Published in 36 F.R. 13232; July 16, 1971

[889 O.G. TM 3]

(112) Initial Processing of Application

On Feb. 1, 1972, the operations of the Trademark Application Section of the Patent Office will be reorganized. The purpose of the reorganization is to provide the public and applicants with more current information concerning newly filed applications.

The prompt initial processing of trademark applications is necessary in order to fulfill one of the main Patent Office functions, that of producing a record, accessible to the public, of new trademark activity to facilitate the clearance of new marks for use, determine the registrability of proposed marks, and avoid conflicts with the rights of others. In order to maintain a record of marks applied for which reflects the most current information available to the Office concerning them, the early processing of drawings in order to have them placed in the search room is considered as a first priority. The processing of these drawings includes the assignment of serial numbers, initial classification, duplication of the drawing and the forwarding of copies of the drawing to the search room. Other functions which are necessary in the processing of applications, such as the processing and mailing of filing receipts, are secondary to the processing of drawings.

In past years, there have been delays in processing applications and forwarding application drawings to the search room. These delays have varied from several weeks to several months. In view of the importance, both to applicants and the public, of recording essential information concerning newly filed applications as quickly as possible, a reorganization of the workflow in the Application Section is being effected.

There is no change in the processing of applications through the mail room and finance branch to the Application Section. However, under the new plan, upon receipt in the Trademark Application Section, all applications will be stamped with a serial number, and the drawing of the mark will be reproduced immediately and placed in the search file. This processing will occur as soon as the application files reach the Application Section. Such procedures as determining whether or not an application will receive a filing date, preparation of the file jackets, and mailing of the filing receipt will take place at a later time.

Applicants who wish to be notified promptly of the date their papers were received in the office and their serial number, may send two self-addressed postcards with their application papers. The mail room will stamp both postcards with the date of receipt and return one to the applicant; the second postcard will be stamped with the serial number and forwarded to the applicant from the Application Section. The postcards should contain the applicant's name and the trademark which is the subject of the application. When more than one set of application papers are forwarded under one cover, postcards should be attached to each set of papers for which a receipt is desired.

Under the new system of processing application papers, your particular attention is directed to the following changes as compared to the present procedure.

1. Application drawings will be placed in the public search file prior to the mailing of the filing receipt.

2. By using the postcard system described above, applicants will be notified sooner of the date of receipt of their papers and the serial number of their application. Applicants are encouraged to use the postcard system.

3. Additional papers sent in by the applicant or attorney should be identified by serial number, thereby enabling the office to process these papers quickly.

4. When an application is accompanied by a petition to the Commissioner under §2.146, the petition will not be considered until processing by the Application Section is complete.

Effective date. The procedure outlined in this notice will become effective Feb. 1, 1972.

RICHARD A. WAHL,
Jan. 11, 1972. *Acting Commissioner of Patents.*

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

Published in 37 F.R. 942; Jan. 21, 1972

[895 O.G. TM 193]

(113) Petition to Make Trademark Applications Special

The practice of expediting the prosecution of new trademark applications on request of the applicant (accelerated prosecution) was rescinded, effective Aug. 1, 1971 (36 F.R. 13231, July 16, 1971; 825 O.G. 2). This action was taken after a careful study of the practice, including a recommendation of the Public Advisory Committee for Trademark Affairs that the Patent Office terminate accelerated prosecution of trademark applications. The study considered both the effect of the procedure on the workload of the Trademark Operations and the broader interest of examining trademark applications in an order which is equitable to all applicants.

Since the termination of this practice, the Office has experienced some increase in the number of petitions requesting the Commissioner to invoke his supervisory authority pursuant to Rule 2.146 in order to advance the examination of applications out of their regular order. This was to be expected since applicants who might have been able to show special circumstances entitling them to advanced examination could previously achieve this special treatment without resorting to a petition. However, some of the petitions now being received are not considered sufficient to justify the extraordinary relief of invoking the supervisory authority of the Commissioner for the purpose of advancing the applications out of their regular order.

In particular, a number of such petitions have been based on the ground that the applicant is about to embark on an advertising campaign or to commit advertising or promotional expenditures in which the mark applied for is material. Such a ground is not considered to constitute appropriate circumstances justifying the advancement of the application out of its regular turn and the petitions based on such ground have been and will continue to be denied. The principal reason for the denial is that these circumstances are applicable to a substantial portion of the trademark applications filed in the Patent Office. The supervisory authority of the Commissioner should be exercised only where an extraordinary reason for such action has been disclosed. See *Anderson & Dyer* v. *Lewry,* 89 O.G. 1861, 1899 C.D. 230, and *Wilputte* v. *Van Ackeren,* 103 USPQ 235. Thus, the extraordinary remedy of invoking the supervisory authority of the Commissioner is not considered appropriate under these circumstances.

In the interest of equitable treatment of all applicants, the policy of the Office in granting such petitions will be restricted to those cases in which particular and very special circumstances exist, such as a demonstrable possibility of loss of substantial rights, rather than circumstances which would be equally applicable to a large number of other applicants for trademark registration.

ROBERT GOTTSCHALK,
Mar. 13, 1972. *Commissioner of Patents.*

[897 O.G. TM 2]

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(114) **Realignment of Patent Office Handling of Opposition Papers**

In order to increase efficiency in processing papers, all activities connected with the handling of oppositions have been transferred from the Trademark Examining Operation to the Trademark Trial and Appeal Board. As a result of the transfer, requests for extension of time to oppose and matters pertinent thereto are now received and processed by the staff of the Trademark Trial and Appeal Board rather than by the staff of the Office of the Director of the Trademark Examining Operation.

No substantial change in procedure in the handling of papers relative to oppositions and extensions of time is contemplated by this realignment of duties in the Patent Office. Reasonable requests for extensions of time to oppose will continue to be granted with liberality particularly if there is no protest by another party and if the parties are negotiating or otherwise exploring bases for settlement, and fees for both verified and unverified oppositions will continue to be required to be filed within the time prescribed for opposing.

RENE D. TEGTMEYER,
Nov. 14, 1974. *Assistant Commissioner for Trademarks.*

[929 O.G. TM 62]

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(115) **Conference of Parties in Trademark Inter Partes Proceedings**

Under the inter partes rules of procedure in trademark cases effective July 1, 1972 (898 O.G. TM 170, May 16, 1972), the interlocutory phases of trademark inter partes proceedings are becoming increasingly involved, and the experience of the Trademark Trial and Appeal Board has been that the difficulties in such proceedings can frequently be resolved more satisfactorily and quickly by conference in person than by correspondence or telephone. Therefore, effective immediately, the following practice is being adopted:

Whenever it appears to the Trademark Trial and Appeal Board that questions or issues arising during the interlocutory phase of a trademark inter partes proceeding have become so complex that their resolution by correspondence or telephone is not practical and would be likely to be facilitated by conference in person of the parties and/or their attorneys with a member or members of the Trademark Trial and Appeal Board, the Board may at its discretion suggest that the parties and/or their attorneys, under circumstances which will not result in undue hardship for any party, meet with the Board at its offices in Crystal Plaza, Arlington, Va., to discuss the resolution of difficulties.

C. MARSHALL DANN,
Feb. 3, 1975. *Commissioner of Patents and Trademarks.*

[932 O.G. TM 2]

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(116) **International Protection of Government Emblems and Seals**

Change of Intent

The Patent and Trademark Office, Department of Commerce, intends to forward only the 50 State seals plus one department seal for each department listed in the publication "Seals and Other Devices in Use at the Government Printing Office" ("Seals") instead of the entire publication, as indicated on page 59366 of the Federal Register of Dec. 23, 1975.

Since the publication had been printed in 1975, it was assumed that few deletions and additions would be necessary. However, the response to the above notice, along with some necessary deletions, resulted in a large number of seals in the publication requiring deletion. This rendered the publication unacceptable for submission to the World Intellectual Property Organization (WIPO).

Therefore, the Patent and Trademark Office now intends to forward only the 50 State seals along with the departmental seal denoted "No. 1" for each department listed in the "Seals" publication. If this is not the preferred departmental or State seal, the department or State involved is requested to notify the Patent and Trademark Office by Sept. 21, 1976. This notification should either specify the number of the preferred seal, as it appears in the "Seals" publication, or provide a clear, black and white photograph, suitable for reproduction, of the preferred seal. The seal must be no larger than 1 1/2 inches in diameter.

These seals will then be forwarded to WIPO for protection under Article 6*ter* of the Paris Convention for the Protection of Industrial Property.

Address all correspondence to: Commissioner of Patents and Trademarks, Washington, D.C. 20231.

C. MARSHALL DANN,
Aug. 18, 1976. *Commissioner of Patents and Trademarks.*

Published in 41 F.R. 35741
[950 O.G. TM 114]

(117) **Recording of "Territorial Assignments" in the Assignment Division of the Patent and Trademark Office**

It has been the practice of the Assignment Division for many years to refuse to record "territorial assignments," that is, assignments purporting to transfer rights in a trademark registration (not a concurrent use registration) for less than the entire United States. Hereinafter, such documents will be recorded as long as the requirements of the Rules of Practice are met by the documents submitted.

The Office is not addressing the validity or effect of such documents by recording same, but is merely recognizing that such transfers may affect title to a registered mark and therefore ought to be recorded. At the time a Section 8 affidavit or declaration or an application for renewal is filed, the Examiner of Trademarks will consider the effect of such a document.

BERNARD A. MEANY,
Oct. 7, 1977. *Assistant Commissioner for Trademarks.*

[964 TMOG 8]

(118) **Trademark Rule 2.165 Requirement Where A Section 8 Affidavit Or Declaration Is Held Insufficient**

Several recent Petitions to the Commissioner have indicated a failure on the part of registrants and their attorneys to follow the requirements of Trademark Rule 2.165. Therefore, reviewing certain basic elements of this rule is considered timely so as to alert registrants and attorneys to technical errors which might lead to the cancellation of a valuable trademark registration.

Part (*a*) of Rule 2.165 indicates that the examiner will notify the registrant when an affidavit or declaration of use under Section 8 of the Statute is insufficient and the reasons therefor. When the registrant wishes the examiner to reconsider the affidavit or declaration, or when the registrant has taken additional steps to rectify the deficiencies and desires to have the examiner reconsider the affidavit or declaration in light of those steps, the request for reconsideration must be submitted within 6 months of the date of mailing of the notice of insufficiency.

Note, however, that a supplemental or substitute affidavit or declaration required by Section 8 cannot be considered unless it is received before the expiration of the six year anniversary of the registration. Consequently, registrants should file their affidavits as early as possible during the sixth year following registration.

There are situations where correcting the deficiency in the affidavit or declaration requires recording an assignment with the Assignment Division of this Office. If the recording cannot be completed within 6 months, the registrant must at least respond to the examiner's notice of insufficiency within that period. The response must indicate the steps being taken to correct the deficiency. The examiner can then allow the registrant additional time or suspend action depending on the circumstances. Registrants must always observe the "six month response" period whenever responding to the examiner from an adverse action.

Part (*b*) of Rule 2.165 permits a registrant to request the Commissioner to review the action of the examiner when he is dissatisfied with that action. Review by the Commissioner should be sought only where it is believed that the examiner has erred in his action. In other words, the Commissioner's role is to review the correctness of the examiner's action and not to serve as an alter ego of the examiner before whom the registrant may seek to correct deficiencies.

When review by the Commissioner has been sought, the decision on that request constitutes the final action of the Patent and Trademark Office. If no review by the Commissioner is sought and if no request for reconsideration of an examiner's action is timely filed, the Commissioner will notify the registrant of the deficiency in the affidavit or declaration after the sixth year has expired. Such notice is never mailed prior to the expiration of the sixth year following registration nor until a reasonable time has elapsed following a six month period from the last action mailed by this Office. This notice constitutes the final action of the Patent and Trademark Office in those cases where the Commissioner's review has not been sought. Once this notice has been mailed, it is too late (under the Rules of Practice) to request the Commissioner to review the action of the examiner. Review would only be proper if an affiant could show circumstances sufficient to suspend the finality element of Rule 2.165(b) pursuant to Rule 2.148.

Registrants will be held to strict compliance with Rule 2.165 as it has been briefed above. Therefore, parties are urged to respond fully as soon as possible after an action is received from the examiner.

BERNARD A. MEANY,
Dec. 12, 1977. *Assistant Commissioner for Trademarks.*

[966 TMOG 80]

(119) **Dissemination Of Trademark Information**

In order to clarify the policy regarding Trademark Examiners giving out Trademark information to the general public, the following directive has been promulgated:

Trademark Examiners are reminded that they may only be responsive to questions regarding applications pending before them. All other questions regarding Trademark matters must be directed to the Director of the Trademark Examining Operation, 703-557-3268.

BERNARD A. MEANY,
Feb. 15, 1978. *Assistant Commissioner for Trademarks.*

[968 TMOG 9]

(120) **Notice To Purchasers Of Trademark Indices**

An incorrect stock number has been assigned to the "1976 Index of Trademarks."

The correct stock number to be used when ordering the "1976 Index of Trademarks" through the Superintendent of Documents is as follows: 003-004-00532-7. The cost of this publication is $8.00 per copy.

RICHARD J. SHAKMAN,
Mar. 14, 1978. *Assistant Commissioner for Administration.*

[969 TMOG 2]

TRADEMARK REGISTRATION TREATY

At the conclusion of the Vienna Diplomatic Conference on industrial property, the Trademark Registration Treaty was signed on June 12, 1973 for the United States. This Treaty is designed to simplify the procedures for obtaining international registration of trademarks for United States companies doing business abroad.

The Treaty was unanimously adopted at the final plenary session. In addition to the United States, the United Kingdom, the Federal Republic of Germany, Italy, Portugal, Hungary, San Marino and Monaco also signed. Some forty-six countries were represented at the Conference. In their closing statements most of the other delegations present indicated their hope to sign before the end of the year. The Treaty remains open for signature through Dec. 31, 1973. The Treaty will enter into force six months after five States have deposited their instruments of ratification or accession.

The negotiations at Vienna represent the climax of the work of several committees of experts and working groups which have met at Geneva since 1970 with the assistance of the World Intellectual Property Organization (WIPO). The U.S. delegation to the Vienna Conference was composed of officials from the Department of State, the U.S. Patent Office and advisors from the private sector. Previous versions of the proposed Treaty were published on Feb. 22, 1972; Sept. 19, 1972; and Feb. 20, 1973, in the Official Gazette *of the U.S. Patent Office. Published in this issue is the complete text of the Trademark Registration Treaty and its Regulations, as adopted by the Conference. For convenience, in addition to the text of the Articles and Regulations as adopted there is included a table of contents at the end of each section.*

Additional copies of this material are available upon request to the Commissioner of Patents.

ROBERT GOTTSCHALK,
June 22, 1973. Commissioner of Patents.

TRADEMARK REGISTRATION TREATY

Adopted at Vienna, June 12, 1973

INTRODUCTORY PROVISIONS

Article 1

Establishment of a Union

The States party to this Treaty (hereinafter called "the Contracting States") constitute a Union for the international registration of marks.

Article 2

Abbreviated Expressions

For the purposes of this Treaty and the Regulations and unless expressly stated otherwise:

(i) "international registration" means a registration effected under this Treaty by the International Bureau in the International Register of Marks;

(ii) "international application" means an application filed for international registration;

(iii) "applicant" means the natural person who or legal entity which files the international application;

(iv) "owner of the international registration" means the natural person or the legal entity in whose name the international registration stands in respect of all or fewer than all the designated States and in respect of all or some only of the goods and/or services listed in that registration;

(v) "mark" means both a trademark and a service mark; it also includes a collective mark within the meaning of Article 7*bis* of the Stockholm (1967) Act of the Paris Convention for the Protection of Industrial Property and a certification mark whether or not such certification mark is a collective mark within the said meaning;

(vi) "national mark" means a mark registered by a government authority of a Contracting State having the power to grant registrations with effect in that State; references to a *national mark* shall not be construed as references also to regional marks;

(vii) "regional mark" means a mark registered by an intergovernmental authority other than the International Bureau having the power to grant registrations with effect in more than one State;

(viii) references to any *final* decision or *final* refusal shall be construed as references to a decision or refusal against which there is no remedy, or against which all remedies have been exhausted, or where the time limit for asking for a remedy against the refusal or decision has expired;

(ix) references to any *publication by the International Bureau* shall be construed as references to publications effected in the official Gazette of that Bureau;

(x) references to the *date of the publication* of the international registration or to the *date of the publication* of the recording of the later designation shall be construed as references to the date of that issue of the official Gazette of the International Bureau in which the international registration or the recording of the later designation, as the case may be, has been published;

(xi) references to any *recording by the International Bureau* shall be construed as references to recordings made in the International Register of Marks;

(xii) "designated State" means any Contracting State in which the applicant or the owner of the international registration desires that such registration produce the effects provided for in this Treaty and which has been identified for that purpose in the international application or any request for the recording of later designations;

(xiii) "national Office" means the government authority of a Contracting State entrusted with the registration of marks; references to a *national Office* shall be construed as referring also to any intergovernmental authority which several States have entrusted with the task of registering regional marks, provided that at least one of those States is a Contracting State, and provided that such authority has been empowered to assume the obligations and exercise the powers which this Treaty and the Regulations provide for in respect of national Offices;

(xiv) "national register of marks" means the register of marks kept by a national Office in which national and/or regional marks are registered;

(xv) "designated Office" means the national Office of the designated State;

(xvi) references to *national law* shall be construed as references to the national law of a Contracting State and, where a regional mark is involved, to the regional treaty providing for the registration of regional marks;

(xvii) "Madrid Agreement" means the Madrid Agreement Concerning the International Registration of Marks;

(xviii) "Union" means the Union referred to in Article 1;

(xix) "Assembly" means the Assembly of the Union;

(xx) "Organization" means the World Intellectual Property Organization;

(xxi) "International Bureau" means the International Bureau of the Organization and, as long as it subsists, the United International Bureau for the Protection of Intellectual Property (BIRPI); and where any provision refers to the receiving of documents, or of payments, by the International Bureau, it also includes any agency of that Bureau established under Article 32(2)(a)(ix);

(xxii) "Director General" means the Director General of the Organization;

(xxiii) "International Classification" means the classifica-

tion established under the Nice Agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks;
(xxiv) "Regulations" means the Regulations referred to in Article 35.

CHAPTER I: SUBSTANTIVE PROVISIONS

Article 3
International Register of Marks

(1) [*International Registrations*] The International Bureau shall register marks in the International Register of Marks according to the provisions of this Treaty and the Regulations.
(2) [*International Applications*] International registrations shall be effected in the basis of international applications.

Article 4
Right To File International Applications and To Own International Registrations

(1) [*Entitlement*] (a) Any resident or national of a Contracting State may file international applications and may own international registrations.
(b) If there are several applicants, they shall have the right to file an international application only if all of them are residents of nationals of Contracting States.
(c) If there are several owners of an international registration, they shall have the right to own such a registration only if all of them are residents or nationals of Contracting States.
(2) [*Natural Persons*] (a) Any natural person shall be regarded as a resident of a Contracting State if:
(i) according to the national law of that State, he is a resident of that State, or
(ii) he has a real and effective industrial or commercial establishment in that State.

(b) Any natural person shall be regarded as a national of a Contracting State if, according to the national law of that State, he has the nationality of that State.
(3) [*Legal Entities*] (a) Any legal entity shall be regarded as a resident of a Contracting State if it has a real and effective industrial or commercial establishment in that State.
(b) Any legal entity shall be regarded as a national of a Contracting State if it is constituted according to the national law of that State.
(4) [*Different Residence and Nationality*] If the State of the residence and the State of the nationality of the applicant or owner of the international registration are different, and only one of those States is a Contracting State, the Contracting State alone shall be considered for the purposes of this Treaty and the Regulations.
(5) [*Certain Associations*] Where under the national law of any Contracting State an association of natural persons or legal entities may own marks notwithstanding the fact that it is not a legal entity, it shall be entitled to file international applications and to own international registrations, provided it is a resident or national of that State within the meaning of paragraph (3).
(6) [*Domestic Filing*] (a) The national law of any Contracting State may provide that, where the applicant is both a resident and a national of that State, an international application may be filed only if the mark that is the subject of the international application is, at the time of the filing of that application, the subject of an application for registration, in the name of the said applicant, in the national register of marks of that State in respect of at least those goods and/or services listed in the international application.
(b) Subparagraph (a) shall not apply where, at the time of the filing of the international application, the mark that is the subject of the international application is already registered in the name of the applicant in the national register of marks of the said State in respect of the said goods and/or services.

Article 5
The International Application

(1)(a) [*Mandatory Contents*] The international application shall contain, as specified in this Treaty and the Regulations:
(i) an indication that it is filed under this Treaty,
(ii) indications concerning the applicant's identity, residence, nationality, and address,
(iii) a reproduction of the mark,
(iv) a list of goods and/or services in which the terms are grouped under the applicable classes of the International Classification and in which each term is comprehensible, permits classification in one class only of that Classification, and, as far as possible, is one that appears in the alphabetical list of goods and/or services of the said Classification,
(v) the identification of the designated State or States,
(vi) in respect of any designated State in which the effects provided for in this Treaty are available either as if the mark had been applied for and registered as a national mark or as if the mark had been applied for and registered as a regional mark, an indication of the choice between the two,
(vii) in respect of any designated State in which the effects provided for in this Treaty are desired as for a collective mark or a certification mark, an indication to that effect.

(b) [*Optional Contents*] The international application may contain a declaration, as provided in the Regulations, claiming the priority of one or more earlier applications filed in or for any country party to the Paris Convention for the Protection of Industrial Property. Furthermore, the international application may contain such additional indications as are provided for in other provisions of this Treaty and in the Regulations.
(c) [*Language, Form, Signature, Fees*] The international application shall be in a prescribed language and in the prescribed form, shall be signed as provided in the Regulations, and shall be subject to the payment of the prescribed fees.
(2) [*Filing With International Bureau*] International applications shall be filed direct with the International Bureau.
(3) [*Filing Through National Office*] (a) Notwithstanding paragraph (2) but subject to subparagraph (c), the national law of any Contracting State may provide that international applications of residents of that State may be filed through the intermediary of the national Office of the said State.
(b) Where the international application is filed through the intermediary of a national Office competent under subparagraph (a), that Office shall indicate on the international application the date on which it received that application and shall promptly transmit the same to the International Bureau, as provided in the Regulations.
(c) Any Contracting State on whose territory an agency of the International Bureau, established under Article 32(2)(a)(ix), is functioning shall, at least for the time such agency functions, suspend the application of any provision of its national law referred to in subparagraph (a) and Article 6(3)(a).

Article 6
Later Designation

(1) [*Possibility of Later Designation*] Any Contracting State not designated in the international application or whose designation has ceased to have the effects provided for in Article 11 may be designated by the applicant or, once the international registration has been effected,

by the owner of the international registration, as provided in the Regulations ("later designation").

(2)(a) [*Mandatory Contents; Filing With International Bureau*] Any later designation shall be the subject of a request for the recording of later designations. Several States may be designated in the same request. The request shall be filed direct with the International Bureau and shall contain, as specified in the Regulations:

(i) an indication that it is for the recording of later designations under this Treaty,
(ii) indications concerning the identity, residence, nationality and address of the applicant or, where the international registration has already been effected, of the owner of the international registration,
(iii) the identification of the international application or, where the international registration has already been effected, of such registration,
(iv) the identification of the later designated State or States,
(v) in respect of any later designated State in which the effects provided for in this Treaty are available either as if the mark has been applied for and registered as a national mark or as if the mark had been applied for and registered as a regional mark, an indication of the choice between the two,
(vi) in respect of any later designated State in which the effects provided for in this Treaty are desired as for a collective mark or a certification mark, an indication to that effect.

(b) [*Optional Contents*] The request may contain a declaration, as provided in the Regulations, claiming the priority of one or more earlier applications filed in or for any country party to the Paris Convention for the Protection of Industrial Property. Furthermore, the request may contain in respect of any State designated therein a list of goods and/or services, provided that, if that list is different from the list of goods and/or services included in the international registration as published or, if the international registration has not yet been published, from the list of goods and/or services included in the international application after any limitation under Article 7(4), it shall conform with the formal concept of limitation as defined in the Regulations. Finally, the request may contain such additional indications as are provided for in other provisions of this Treaty and in the Regulations.

(c) [*Language, Form, Signature, Fees*] The request shall be in a prescribed language and in the prescribed form, shall be signed as provided in the Regulations, and shall be subject to the payment of the prescribed fees.

(3) [*Filing Through National Office*] (a) Notwithstanding paragraph (2)(a) but subject to Article 5(3)(c), the national law of any Contracting State may provide that requests for the recording of later designations by residents of that State may be filed through the intermediary of the national Office of the said State.

(b) Where the request for the recording of later designations is filed through the intermediary of a national Office competent under subparagraph (a), that Office shall indicate on the request the date on which it received that request and shall promptly transmit the same to the International Bureau, as provided in the Regulations.

Article 7

International Registration or Declining of the International Application

(1) [*No Defects*] Subject to paragraphs (2) to (5), the International Bureau shall promptly effect the international registration as applied for, and the date under which such registration shall be effected ("international registration date") shall be the date on which the international application was received by the International Bureau or, in the case of an international application filed through the intermediary of a national Office under Article 5(3), the date on which it was received by that Office provided that the said application is received by the International Bureau before the expiration of 45 days from that date. The International Bureau shall issue to the owner of the international registration a certificate of international registration.

(2) [*Defects Which Necessarily Entail a Later Registration Date*] (a) Where the International Bureau finds any of the following defects, that is to say, where:

(i) the international application does not contain an indication that it is filed under this Treaty,
(ii) the international application is in a language other than one of the prescribed languages,
(iii) the international application contains no indications concerning the residence or nationality of the applicant or only such indications as do not permit the conclusion that he has the right to file international applications,
(iv) the international application contains no indications concerning the applicant's identity and address or only such indications as do not permit him to be identified and reached by mail,
(v) the international application does not include the reproduction of the mark,
(vi) the international application does not contain a list of goods and/or services,
(vii) the international application does not designate any Contracting State,
(viii) no fees have been received by the International Bureau on or before the date on which the international application is received by the Bureau or, where the international application is filed through the intermediary of a national Office under Article 5(3), no fees have been received by the International Bureau within 45 days from the date on which that Office received the international application,
(ix) the amount of the fees received by the International Bureau by the date referred to in item (viii) does not attain the amount ("minimum amount") fixed in the Regulations, it shall invite the applicant to correct the defect; however, where the defect referred to in item (iv) makes it unlikely for the invitation to reach the applicant, the International Bureau is not required to send such invitation.

(b) If the defect is not corrected within three months from the date on which the International Bureau received the international application, the International Bureau shall decline that application.

(c) If the defect is corrected within the time limit referred to in subparagraph (b) and unless the international application is declined under paragraph (3)(b), the International Bureau shall effect the international registration, and the international registration date shall be the date on which that Bureau received the required correction or the prescribed amount of the fees, unless a later date is applicable under paragraph (3)(d).

(3) [*Defects Which Do Not Necessarily Entail a Later Registration Date*] (a) Where the International Bureau finds any of the following defects, that is to say, where:

(i) the amount of the fees received by the International Bureau by the date referred to in paragraph (2)(a)(viii) is less than the amount prescribed but attains the minimum amount,
(ii) the international application does not contain, in respect of any designated State to which Article 5(1)(a)(vi) applies, the indication of the choice referred to in the said provision,
(iii) the international application is not signed, it shall invite the applicant to correct the defect.

(b) If the defect is not corrected within three months from the date on which the International Bureau received the international application, the International Bureau shall decline that application or, if the only defect which is not corrected within the said time limit is the defect referred to in subparagraph (a)(ii), the International Bureau shall decline to record the State concerned as a designated State.

(c) If the defect is corrected before the expiration of

one month from the date of the invitation referred to in subparagraph (a) and unless the international application is declined under subparagraph (b) or paragraph (2)(b), the International Bureau shall effect the international registration, and the international registration date shall be the date referred to in paragraph (1), unless a later date is applicable under paragraph (2)(c).

(d) If the defect is corrected later than at the expiration of one month from the date of the invitation referred to in subparagraph (a) but earlier than at the expiration of three months from the date on which the International Bureau received the international application, and unless the international application is declined under paragraph (2)(b), the International Bureau shall effect the international registration, and the international registration date shall be the date on which that Bureau received the required correction or payment, unless a later date is applicable under paragraph (2)(c).

(4) [*Classification Causing Increase in Fees*] (a) Where the International Bureau finds that, by classifying any of the terms appearing in the list of goods and/or services in or also in a class or classes of the International Classification in which such term was not classified in the international application as filed, the amount of the fees required is higher than if that term had not been so classified, the invitation referred to in paragraph (2)(a) or (3)(a) shall contain appropriate explanations and shall indicate that the applicant may limit the list of goods and/or services.

(b) If, within three months from the date on which the International Bureau received the international application, it receives from the applicant a statement which limits the list of goods and/or services in conformity with the formal concept of limitation as defined in the Regulations, the International Bureau shall modify the list of goods and/or services accordingly and, if such modification entails a change in the prescribed amount of the fees, such change shall be taken into account by the International Bureau in determining that amount and in applying paragraph (2)(b), (2)(c), (3)(b), (3)(c), or 3(d), as the case may be.

(5) [*Details*] (a) The Regulations shall provide for the details of the procedure under paragraphs (1) to (4).

(b) Failure to send or receive any invitation referred to in paragraphs (2) to (4), or any delay in dispatching or receiving it, or any error therein, shall not extend the time limits fixed in those paragraphs and shall not affect any obligation to decline the international application.

(c) Where the international application is declined, the International Bureau shall reimburse to the applicant such amounts as are specified in the Regulations.

(6) [*Defects Peculiar to Filings Through National Offices*] Where the international application filed through the intermediary of a national Office under Article 5(3):

(i) does not indicate that the applicant is a resident of the State through the intermediary of whose national Office the international application was filed, or

(ii) does not contain a statement by the said national Office indicating the date on which that Office received the international application, or

(iii) contains the said statement indicating a date which precedes by more than 45 days the date on which the International Bureau received the international application, that application shall be treated as if it had been filed direct with the International Bureau on the date it reached that Bureau.

Article 8

Recording or Declining of Later Designations

(1) [*No Defects*] Subject to paragraph (2), the International Bureau shall promptly effect the recording of any later designation as requested, and the date under which such recording shall be effected ("recording date of the later designation") shall be the date on which the request for the recording of the later designation was received by the International Bureau or, in the case of a request filed through the intermediary of a national Office under Article 6(3), the date on which it was received by that Office, provided that the said request is received by the International Bureau before the expiration of 45 days from that date. The International Bureau shall issue to the owner of the international registration a certificate of the recording of the later designation.

(2) [*Defects*] (a) The provisions of Article 7(2) to (6) shall apply, *mutatis mutandis*, to the recording of later designations and declining of requests for the recording of later designations, provided that, once the international registration has been effected, any reference to the applicant shall be considered a reference to the owner of the international registration.

(b) Notwithstanding subparagraph (a), items (v) and (vi) of Article 7(2)(a) shall be considered to have been replaced by the following:

"(v) the request does not identify the international application or, once the international has been effected, such registration."

(c) Notwithstanding subparagraph (a), Article 7(3)(a) shall be considered to have been completed by the following:

"(iv) any list of goods and/or services contained in the request does not conform with the requirements of Article 6(2)(b), second sentence."

Article 9

Avoiding the Effects of Declining

(1) [*Requesting Redress Through Designated Office*] Where the International Bureau has declined the international application or a request for the recording of later designation, the applicant or the owner of the international registration may, within two months from the date of the notification of the declining, file with the national Office of any State designated in the declined international application or declined request:

(i) a petition for the purpose of requesting the International Bureau to proceed, in respect of that State, where the international application was declined, with the international registration and the recording of the designation of the said State or, where the request for the recording of the later designation was declined, with the recording of the designation of that State, or

(ii) an application for the registration, in the national register of marks ("national application"), of the mark that is the subject of the declined international application or declined request, in respect of all or some of the goods and/or services indicated in the said international application or the said request, such application complying with all the requirements of the national law of the said State for the filing of applications for the registration of marks in the national register of marks.

(2) [*Decision on the Request*] If the national Office or any other competent authority of the said State finds that the declining, by the International Bureau, of the international application or of the request for the recording of the later designation of that State was unjustified under this Treaty or the Regulations, or that the declining was based on the fact that there was a delay in meeting a time limit which must be excused by virtue of Article 29(1), then:

(i) where a petition has been filed under paragraph (1)(i), the said national Office shall request the International Bureau to proceed as provided in that paragraph, and the International Bureau shall proceed as requested, and the international registration date or the recording date of the later designation shall be the same as if the declining had not taken place,

(ii) where a national application has been filed under paragraph (1)(ii), that application shall, provided it complies with all the requirements of the national law of the said State for the filing of applications for the registration of marks in the national register of marks,

be treated as if it had been filed on the date which would have been the international registration date or the recording date of the later designation had the declining not taken place.

(3) [*Recording of the Petition for Redress*] The applicant or the owner of the international registration who files a petition under paragraph (1)(i) shall, at the time of filing the petition, transmit a copy of that petition to the International Bureau. If the petition relates to a mark which is already registered in the International Register of Marks, the International Bureau shall, as provided in the Regulations, record and publish the fact that it has received a copy of such petition; otherwise it shall keep the said copy in its files.

Article 10

Publication and Notification

(1) [*Publication*] International registrations and recordings of later designations shall be promptly published by the International Bureau, as provided in the Regulations.

(2) [*Notification*] International registrations and recordings of later designations shall be promptly notified by the International Bureau to the national Offices of each designated State, as provided in the Regulations.

Article 11

Effects of International Registration and of Recording of Later Designation

(1) [*National Application Effect*] The international registration of a mark and the recording of any later designation, published and notified as provided in Article 10, shall have the same effect in each designated State as if an application for the registration of the mark in the national register of marks had been filed with the national Office of that State on the international registration date or on the recording date of the later designation, as the case may be.

(2) [*National Registration Effect*] Furthermore, the said international registration and recording shall, subject to Articles 12 and 13, have the same effect in each designated State as if the mark had been registered in the national register of marks of that State; such effect shall come into existence in any designated State:

(i) where no refusal or notice that a refusal may eventually be pronounced ("notice of possible refusal") has been notified by the national Office of that State within the time limit fixed in Article 12(2)(a)(i), at the expiration of the said time limit or on such earlier date as may be prescribed by the national law of that State,

(ii) where a refusal or a notice of possible refusal has been notified by the national Office of that State within the time limit fixed in Article 12(2)(a)(i), if and when, and to the extent to which, the refusal is reversed by a final decision or the final decision taken in the proceedings referred to in the notice of possible refusal results in acceptance of the effect provided for in this paragraph,

and shall be deemed to have started as of the international registration date or the recording date of the later designation, as the case may be.

(3) [*Several National Registers*] Where, in any designated State, there is more than one national register of marks or the national register of marks has several parts, the reference in paragraphs (1) and (2) to the national register of marks shall be construed as a reference to that national register or that part of the national register which affords the highest degree of protection, unless another register or part of the register is indicated in the international application or the request for the recording of the later designation. In the case of such indication, the reference in paragraphs (1) and (2) to the national register of marks shall be construed as a reference to the register or part of the register so indicated.

Article 12

Refusal of the Effects Provided for in Article 11

(1) [*Grounds of Refusal*] Subject to paragraph (2) and Articles 19, 21(3) and 22(3), the effects provided for in Article 11 may, in respect of any designated State, be refused by the competent authorities of that State:

(i) on the same grounds and to the same extent as those in respect of which applications for the registration of marks in the national register of marks may be refused under the national law of the said State, provided that such grounds are not incompatible with this Treaty and the Regulations or the most recent provisions of the Paris Convention for the Protection of Industrial Property by which that State is bound, and provided that Article 6*quinquies* of the Stockholm (1967) Act of the said Convention shall apply also to marks registered under this Treaty, the international registration taking the place, for the purposes of the said Article 6 *quinquies*, of registration in the country of origin,

(ii) on the ground that the owner of the international registration is not entitled to own international registrations or that the applicant was not entitled to file international applications.

(2) [*Time Limit and Other conditions*] (a) Any refusal under paragraph (i) shall be effective only:

(i) if the refusal or notice of possible refusal is notified, as provided in the Regulations, by the national Office of the designated State to the International Bureau so that the latter receives it within 15 months or, in the case of a certification mark, 18 months from the date of the publication of the international registration, or, in the case of a later designation, of the publication of the recording of the later designation of such State, and

(ii) in the case of a refusal, if the grounds for the refusal are specified, and provided, where such refusal is not final, that the grounds given in the final decision of refusal include at least one of the grounds specified in the said refusal and the final decision is or is also based on at least one of the grounds specified in the said refusal,

(iii) in the case of a notice of possible refusal followed by a refusal, if the notice specifies, as provided in the Regulations, the grounds on which a refusal may eventually be pronounced, and provided that the grounds given in the final decision of refusal include at least one of the grounds specified in the said notice and the final decision is or is also based on at least one of the grounds specified in the said notice.

(b) The proviso of subparagraph (a)(ii) and the proviso of subparagraph (a)(iii) shall not apply where the final decision is that of a court or other independent review authority.

(c) Subparagraph (a) shall not apply where the refusal is based on lack of compliance with the requirements of the national law of the designated State permitted by Article 19(3).

(3) [*Remedies*] The owner of the international registration shall, with reasonable time limits, have in any designated State the same remedies against any decision of refusal and the same procedural and substantive rights in connection with any intended refusal, whether ex officio or based on the opposition of a third party, as have applicants who apply for the registration of marks in the national register of marks of the State in question.

(4) [*Procedural Details*] (a) The International Bureau shall record any notification received under paragraph (2)(a) and publish a corresponding notice.

(b) Where the decision of refusal is final, the national Office of the designated State shall notify the International Bureau accordingly, and that Bureau shall record the final decision, cancel the designation of that State, or, in a case where the final decision relates to some only of the goods and/or services listed, cancel in respect of the said State those goods and/or services to which the said decision relates, and publish such cancel-

lation.

(c) Where a refusal which is not final or a notice of possible refusal has been notified under paragraph (2)(a) and the final decision results in acceptance of the effect referred to in Article 11(2), the national Office of the designated State shall notify the International Bureau accordingly, and the International Bureau shall record the notification received and publish a corresponding notice.

(d) The details of the procedures referred to in subparagraphs (a) to (c) are provided in the Regulations.

Article 13

Cancellation of the Effect Acquired Under Article 11(2)

(1) [*Grounds of Cancellation*] Subject to Article 19, the effect acquired under Article 11(2) may, in respect of any designated State, be cancelled by the competent authorities of that State:

(i) on the same grounds, to the same extent and subject to the same procedure as those in respect of which registrations of marks in the national register of marks may be cancelled under the national law of the said State, provided that such grounds and such procedure are not incompatible with this Treaty and the Regulations or the most recent provisions of the Paris Convention for the Protection of Industrial Property by which that State is bound, and provided that Article 6 *quinquies* of the Stockholm (1967) Act of the Paris Convention for the Protection of Industrial Property shall apply also to marks registered under this Treaty, the international registration taking the place, for the purposes of the said Article 6*quinquies*, of registration in the country of origin,

(ii) on the ground that the owner of the international registration is not entitled to own international registrations or that the applicant was not entitled to file international applications.

(2) [*Defense and Remedies*] The competent authorities of the designated State shall give, with reasonable advance notice, an opportunity to the owner of the international registration to defend his rights in any cancellation proceeding and such owner shall have the same remedies against any decision of cancellation as have owners of marks registered in the national register of marks of the said State.

(3) [*Procedural Details*] If the decision of cancellation is final, the national Office of the designated State shall notify the International Bureau accordingly, and that Bureau shall record that decision, cancel the designation of the said State or, in a case where the cancellation relates to some only of the goods and/or services listed, cancel—in respect of that State—those goods and/or services to which the said decision relates, and publish such cancellation.

Article 14

Change in the Ownership of the International Registration

(1)(a) [*Total or Partial Change; Request; Recording*] Where the ownership of any international registration changes so that the new owner has become the owner in respect of all or fewer than all of the designated States and in respect of all or some only of the goods and/or services, the change in ownership shall, on request, subject to paragraph (2), be recorded by the International Bureau.

(b) [*Details of the Request*] The request shall contain, as provided in the Regulations:

(i) an indication to the effect that the recording by the international Bureau of a change in ownership is requested,

(ii) the international registration number of the international registration,

(iii) indications concerning the name, residence, nationality and address of the new owner,

(iv) the identification of those of the designated States in respect of which the new owner has acquired ownership and the identification, in respect of each of those States, of those of the goods and/or services for which the new owner has acquired ownership.

(c) [*Signature*] The request shall be signed by the person who, pursuant to the change in ownership, ceases to own the international registration in respect of all or fewer than all of the designated States and in respect of all or some only of the goods and/or services ("earlier owner") or, where the earlier owner is unable to sign, by the new owner, provided that if it is signed by the new owner the request shall also contain an appropriate attestation, as provided in the Regulations, by the national Office of the Contracting State of which the earlier owner was, at the time of the change of ownership, a national or, if at that time the earlier owner was not a national of a Contracting State, by the national Office of the Contracting State, of which, at the said time, the earlier owner was a resident.

(d) [*Fee; Publication; Notification*] The request shall be subject to the payment of a fee to the International Bureau, and the recording shall be published by that Bureau and notified by it to the earlier owner and the new owner and to the interested designated Offices, as provided in the Regulations.

(2) [*Declining of Request*] (a) In any of the following cases, the International Bureau shall decline the request and shall notify accordingly the person who has signed it:

(i) Where the request does not contain the indication referred to in paragraph (1)(b)(i),

(ii) where the request does not contain the number referred to in paragraph (1)(b)(ii),

(iii) where the request contains no indications concerning the residence or nationality of the new owner, or only such indications as do not permit the conclusion that he is entitled to own international registrations,

(iv) where the request contains no indications concerning the identity and address of the person who has signed it or only such indications as do not permit him to be identified and reached by mail,

(v) where the request does not identify any designated State in respect of which the new owner has acquired ownership,

(vi) where the request does not identify, as provided in the Regulations, any goods and/or services in respect of each of the designated States for which the new owner has acquired ownership,

(vii) where the request is not signed and, if it is signed by the new owner, where it does not contain the attestation, as provided in the Regulations, referred to in paragraph (1)(c),

(viii) where the prescribed fee has not been received.

(b) Where the request has the defect referred to in subparagraph (a)(iv) to the extent that it makes it unlikely for the notification referred to in subparagraph (a) to reach the person who signed the request, the International Bureau is not required to send such a notification.

(3) [*Effect*] Subject to paragraph (4), any recording effected under paragraph (1) shall, from the date of such recording, have the same effect as if it had been effected in the national register of marks, or any other related register, of each of the designated States to which the request relates.

(4)(a) [*Denial of Effect: Grounds*] The competent authorities of any designated State may, as far as that State is concerned, deny the effect referred to in paragraph (3) on grounds which, according to its national law, do not allow of changes in ownership or on the ground that the new owner is not entitled to own international registrations.

(b) [*Denial of Effect: Evidence*] The national law of any Contracting State may provide that the effect referred to in paragraph (3) may, as far as such State is concerned, be denied if, within three months from the date of the publication referred to in paragraph (1)(d) or, where that national law provides for a longer period, within that period, evidence is not adduced before its

national Office which satisfies the conditions of the national law as regards changes in ownership. Any national Office may collect the fee prescribed by its national law in connection with the examination of the said evidence adduced before it.

(c) [*Denial of Effect: Notification by Designated State; Recording, Notification, Publication*] Where the competent authorities of any designated State deny the effect referred to in paragraph (3), the national Office of that State shall promptly notify the International Bureau accordingly, and that Bureau shall record the denial and effect the corresponding notifications and publication. The details of the procedure are provided in the Regulations.

(5) [*Switchover to National Register Where an Owner Cannot Own International Registrations*] Where there is a change in ownership other than by contract between the earlier owner and the new owner, and where the new owner is a person who is not entitled to file international applications but is entitled under the national law of any designated State to file applications for the registration of marks in the national register of marks of that State, the new owner may file an application for the registration, in the said national register, of the mark which is registered, and in respect of all or some of the goods and/or services which are listed, in the International Register of Marks in respect of that State. If, within two years from the change in ownership and prior to six months after the expiration of the initial term of the international registration or the then running term of renewal, as the case may be, the new owner files such an application, that application shall be treated in the said State as if it had been filed at the time when the designation of that State took effect.

Article 15

Change in the Name of the Owner of the International Registration

(1) [*Recording*] Where the owner of the international registration changes his name, such change in the name of the owner shall, on his request, be recorded by the International Bureau.

(2) [*Request*] (a) Any request may relate to several international registrations of the same owner.

(b) The request shall contain, as provided in the Regulations:

(i) an indication to the effect that the recording by the International Bureau of a change in the name of the owner of the international registration is requested,
(ii) a declaration to the effect that the change in name does not amount to a change in the ownership of the international registration,
(iii) the international registration number of the international registration,
(iv) an indication of the former name and of the new name of the owner of the international registration.

(c) The request shall be signed with the new name of the owner of the international registration.

(d) The request shall be subject to the payment of a fee to the International Bureau.

(3) [*Publication, Notification, Copies of Documents*] The recording shall be published by the International Bureau and shall be notified to the designated Offices, as provided in the Regulations.

(4) [*Declining of Request*] In any of the following cases, the International Bureau shall decline the request and shall notify accordingly the owner:

(i) where the request does not contain the indications referred to in paragraph (2)(b),
(ii) where the request is not signed as provided in paragraph (2)(c),
(iii) where the prescribed fee has not been received.

(5) [*Effect*] Subject to paragraph (6), any recording effected under paragraph (1) shall, from the date of such recording, have the same effect as if it had been effected in the national register of marks, or any other related register, of each of the designated States.

(6)(a) [*Denial of Effect: Evidence*] The national law of any Contracting State may provide that the effect referred to in paragraph (5) may, as far as such State is concerned, be denied if, within three months from the date of the publication referred to in paragraph (3)(a) or, where that national law provides for a longer period, within that period, evidence is not adduced before its national Office which proves that the national person or legal entity designated by the former name and the new name is the same.

(b) [*Denial of Effect: Notification by Designated State; Recording, Notification, Publication*] Where the competent authorities of any designated State deny the effect referred to in paragraph (5), the national Office of that State shall promptly notify the International bureau accordingly, and that bureau shall record the denial and effect the corresponding notifications and publication. The details of the procedure are provided in the Regulations.

Article 16

Limitation of the List of Goods and/or Services

(1) [*Request; Recording*] On the request of the owner of the international registration, the International Bureau shall record, in respect of any designated State, any limitation of the list of goods and/or services which conforms with the formal concept of limitation as defined in the Regulations.

(2) [*Fees; Publication and Notification*] The request for recording shall be subject to the payment of a fee to the International Bureau, and the recording shall be published by that Bureau and notified to all the interested designated States, as provided in the Regulations.

(3) [*Declining of the Request*] The International Bureau shall decline the recording of any change in the list of goods and/or services which does not conform with the said formal concept of limitation or other requirements of the request, and shall notify the owner of the International Registration accordingly, as provided in the Regulations.

(4) [*Effect*] Subject to paragraph (5), any recording effected under paragraph (1) shall, from the date of such recording, have the same effect as if it had been effected in the national register of marks of each of the designated States to which the request relates.

(5)(a) [*Limitation on the Invitation of the Designated Office*] If the national Office or other competent authority of a designated State finds that the limitation requested by the owner of the international registration in respect of that State but declined by the International Bureau is, in fact, a limitation in the sense that the terms proposed in the request relate only to goods and/or services which are covered by the terms appearing in the international registration, the national Office of that State, upon petition by the owner, shall, as provided in the Regulations, invite the International Bureau to record the limitation in respect of that State.

(b) [*Reinstatement of the List of Goods and/or Services on the Invitation of the Designated Office*] If the national Office or other competent authority of a designated State finds that the limitation requested by the owner of the international registration and recorded by the International Bureau is, in fact, not a limitation in the sense indicated in subparagraph (a), the national Office of that State may, as provided in the Regulations and after having heard the owner, invite the International Bureau to reinstate, in respect of that State, wholly or in part, the list of goods and/or services as it was prior to the limitation in question.

(c) [*Procedural Details*] The International Bureau shall proceed as invited and effect, as provided in the Regulations, the corresponding recording, publication and notifications.

Article 17

Term and Renewal of the International Registration

(1) [*Initial Term*] The initial term of any international registration shall be ten years from the international registration date.

(2) [*Renewal*] (a) Any international registration may be renewed in respect of any designated State by its owner for terms of ten years.

(b) Renewal shall prolong the effects provided for in Article 11 in each designated State for the term of the renewal.

(c) Each term of renewal shall start on the day following the day on which the initial term of the international registration or the term of the last renewal expires.

(3)(a) [*Demand*] Renewal shall be the subject of a demand presented to the International Bureau as provided in the Regulations, and shall be subject to the payment of fees, as provided in the Regulations. The demand shall not be presented and the fees shall not be paid earlier than six months before, or later than six months after, the starting date of the term of renewal. If the demand is presented or the fees are received after the starting date of the term of renewal, renewal shall be subject to the payment of an additional fee ("renewal surcharge"), as provided in the Regulations, which shall be paid before the expiration of six months after the starting date of the term of renewal.

(b) [*Publication*] The International Bureau shall record and publish the renewal and shall notify each designated Office accordingly, as provided in the Regulations.

Article 18

Fees

(1) [*Fees Belonging to the International Bureau*] (a) The International Bureau shall be entitled to fees in connection with the filing of each international application, request for recording of later designations, demand for renewal, and such other operations and services as are subject, according to this Treaty or the Regulations, to the payment of fees.

(b) The Regulations fix the amounts of the fees referred to in subparagraph (a).

(2) [*Fees Belonging to the Contracting States*] Each Contracting State shall be entitled to fees ("State fees") in connection with each designation and each renewal concerning it. The State fees shall be either "individual" or "standard," according to the choice of the Contracting State. The choice shall be exercised and applied as provided in the Regulations and shall apply to all designations and renewals concerning the Contracting State.

(3) [*Individual State Fees*] (a) Subject to subparagraphs (b) to (f), the amounts of individual State fees applicable to any State shall be determined by such State.

(b) The amounts of the individual State fees shall be communicated by the national Office of the Contracting State to the International Bureau in the currency and within the time limits specified in the Regulations. They shall remain applicable for the periods specified in the Regulations.

(c) The amounts of the individual State fees may vary only according to the number of classes to which the goods and/or services listed in respect of that State belong under the International Classification and according to whether the mark is or is not a collective mark or a certification mark.

(d) Any individual State fee shall belong to the designated State in respect of which it was paid and shall be transferred to its national Office as provided in the Regulations.

(e) The amount of the individual State fee to which the Contracting State is entitled in connection with each designation concerning it ("individual State designation fee") shall not exceed the total amount of any filing, class, examination, registration and publication fees which that State prescribes in connection with an application for registration in the national register of marks.

(f) The amount of the individual State fee to which the Contracting State is entitled in connection with each renewal concerning it ("individual State renewal fee") shall not exceed the amount of the renewal fee which that State prescribes for the renewal of a registration in the national register of marks, provided that, if the latter amount relates to a period which is longer or shorter than ten years, the said limit shall be proportionately reduced or proportionately increased, as the case may be.

(4) [*Standard State Fees*] (a) The amounts of the standard State designation fee and of the standard State renewal fee shall be fixed in the Regulations.

(b) The standard State fees shall belong to the States which have chosen standard State fees. The total amount of such fees collected by the International Bureau for any given calendar year shall be distributed and transferred in the course of the following year to the national Offices of the Contracting States to which the standard State fees apply in proportion to the number of designations and renewals concerning each of them, provided that the number resulting for each Office shall be first multiplied by the coefficient, as fixed in the Regulations, based on the extent of the examination which the national law provides.

(5) [*Other Details Concerning Fees*] The Regulations give further details concerning fees and provide for the total or partial reimbursement of certain fees in certain circumstances.

Article 19

Certain National Requirements

(1) [*Fees*] Subject to Article 14(4)(b), no national Office of any designated State shall, unless acting as an independent review authority, require the payment of any fee by the applicant or the owner of the international registration in connection with the obtaining and renewing of the effects, in the said State, of international applications, international registrations, and recordings concerning such applications and registrations.

(2) [*Number of Classes and of Goods and/or Services*] No designated State may refuse or cancel the effects provided for in Article 11 merely on the grounds that its national law allows the registration of marks only in respect of a limited number of classes or a limited number of goods and/or services.

(3)(a) [*Actual Use*] The national law of any Contracting State may impose the same conditions as are applicable to marks whose registration is applied for or which are registered in the national register of marks in that State in respect of any requirement that the owner of an international registration use the mark in that State or in any other place, provided that such State shall not refuse under Article 12, cancel under Article 13, or otherwise fail to accord the effects of the international registration as defined in Article 11, on the ground that the mark has not been used at any time prior to the expiration of three years counted from the international registration date or the recording date of the later designation, as the case may be. However, the national law of any Contracting State may provide that any action for infringement based upon an international registration may be started only after the owner of such international registration has commenced the continuing use of the mark in the said State and that any remedy resulting from such action shall relate only to the period after such use has commenced.

(b) [*Actual Use: Continued*] Where, at the expiration of the three-year time limit referred to in subparagraph (a), the final decision referred to in Article 11(2)(ii) has not been made, the said time limit shall be extended until the expiration of one year counted from the date on which the effect provided for in Article 11(2) does, in fact, come into existence, provided that in no case shall any Contracting State be required to extend the said three-year time limit by more than two years. This subparagraph shall not apply to any Contracting State

whose national law does not permit of such extension. Any such State shall notify the International Bureau of the provisions of its national law in this regard at the time it deposits its instrument of ratification or accession. Each Contracting State shall notify the International Bureau whenever its national law changes in regard to this subparagraph.

(c) [*Actual Use: Continued*] Where prior to the international registration date or the recording date of the later designation, as the case may be, the mark has been registered, in the name of the person who is the owner of the international registration, in the national register of marks of any designated State, or has been the subject on the part of the said person of an application for registration in that register, the proviso of subparagraph (a) and the first sentence of subparagraph (b) shall not apply to the extent that the said registration or application relates to the same goods and/or services as are listed in respect of such State in the international registration. However, where the application for registration in the national register was filed less than three years before the international registration date or the recording date of the later designation, as the case may be, the proviso of subparagraph (a) shall apply, but only during the period between such date and the expiration of the third year counted from the date on which the said application was filed. Where the three-year time limit is extended under subparagraph (b), the preceding sentence shall be applied accordingly. The present subparagraph shall also apply where the earlier registration is one effected in the international register under the Madrid Agreement or the present Treaty.

(d) [*Declaration of Actual Use*] Where one of the conditions of the national law of the designated State referred to in subparagraph (a) consists of a requirement, general in the sense that it is applicable to all marks registered in the national register of marks of that State, that a declaration stating that the mark is or is still in use in that State must be filed with its national Office at certain points in time or in connection with each renewal or other specific event ("routine declaration"), such declaration may, in the form prescribed by the national law of that State or in the form prescribed in the Regulations, be filed with the International Bureau and shall have the same effect as if it had been filed with the national Office of that State on the date on which it was received by the International Bureau. Such declaration shall be promptly forwarded by the International Bureau to the said national Office. The said effect shall not be denied on the ground that the declaration was not accompanied by any required supporting evidence, or that the evidence accompanying it was insufficient, without the said national Office's giving the owner of the international registration an opportunity to adduce or complete before it any required evidence within not less than three months after having notified the said owner or his duly appointed representative that evidence or additional evidence is required. The present subparagraph shall not apply in inter partes and other proceedings in which the requirement is not a general one in the sense indicated above ("ad hoc requirement").

(e) [*Declaration of Actual Use: Continued*] No requirement referred to in subparagraph (d) shall be applicable prior to the expiration of the time limit under the proviso of subparagraph (a), subject, where applicable, to subparagraph (b), or subparagraph (c).

(4) [*Declaration of Intent To Use the Mark*] (a) Any Contracting State may apply its national law requiring that applicants file a declaration with its national Office to the effect that they intend to use the mark, provided that such requirement shall be considered to have been complied with if a declaration in the form specified in the Regulations to the effect that the applicant or the owner of an international registration intends to use the mark in that State is contained in the international application or request for the recording of the later designation, as the case may be.

(b) The International Bureau shall, as provided in the Regulations, notify the national Office of any designated State in respect of which a declaration under subparagraph (a) was filed with that Bureau of such declaration.

(5) [*Provisions Common to Paragraphs (3) and (4)*] Whenever paragraphs (3) and (4) refer to use of the mark by the applicant or the owner of the international registration, use by a person whose use, under the applicable national law, inures to the benefit of the applicant or the owner shall be sufficient for invoking the benefits provided for in the said paragraphs.

(6) [*Collective Marks and Certification Marks*] Any Contracting State may apply its national law requiring that where the mark is a collective mark or a certification mark the owner thereof must adduce before its national Office certain supporting documents and other evidence, including in particular the bylaws of the association or other entity owning such mark and the rules concerning the control exercised over the use of such mark.

(7) [*Representation*] No designated State shall require that the applicant or the owner of the international registration be represented by any natural person or legal entity located in that State or that, for the purpose of serving notices on such applicant or owner, an address in that State be indicated, except where, in respect of or based on the mark which is the subject of the international application or the international registration, the applicant or owner institutes or defends a proceeding before the national authorities of the said State.

(8) [*Service of Certain Notifications*] (a) The national law of any Contracting State may provide that proceedings before a national authority, including a court, in that State may, for the cancellation in that State pursuant to Article 13 of the effect provided for in Article 11(2), and for no other matter, validly be commenced against the owner of the international registration by means of service of a notification addressed to him at the International Bureau.

(b) The International Bureau shall promptly forward the said notification to the owner of the international registration by registered airmail accompanied by a postal receipt form (*avis de reception, Ruckschein*).

(c) Promptly upon return to the International Bureau of the receipt form, that Bureau shall send to the party instituting the proceeding a copy, certified by that Bureau, of the said receipt form.

(d) If the receipt form showing receipt by the said owner is not received by the Internal Bureau within one month from the date of its having mailed the notification, the International Bureau shall promptly publish the notification.

(e) Any national law referred to in subparagraph (a) shall provide for a reasonable time limit for the owner of the international registration to respond to the notification and defend his rights in the proceedings. This time limit shall not be less than three months from the date of the notification.

(9) [*Certain Associations*] Article 4(5) shall be without prejudice to the application of the national law in any designated State. However, no such State shall refuse or cancel the effects provided for in Article 11 on the ground that the applicant or the owner of the international registration is an association of the kind referred to in Article 4(5) if, within two months from the date of an invitation addressed to it by the designated Office, the said association files with that Office a list of the names and addresses of all the natural persons or legal entities who or which comprise it, together with a declaration that its members are engaged in a joint enterprise. The said State may, in such a case, consider the said persons or entities as the owners of the international registration standing in the name of the said association.

(10) [*Certification of Documents Issued by the International Bureau*] Where any document issued by the International Bureau bears the seal of that Bureau and the signature of the Director General or a person acting on his behalf, no authority of any Contracting State shall require authentication, legalization or any other certification of such document, seal or signature, by any other

person or authority.

Article 20

Recordings Effected by National Offices

(1) [*Notification of the International Bureau*] The national Office of any Contracting State which effects any recording in its own register of marks or in any other related register in respect of matters that may be recorded in the International Register of Marks with regard to any mark which is registered in the International Register of Marks and for which that State is a designated State shall, at the time of effecting such recording and as provided in the Regulations, notify the International Bureau of the said recording unless the recording has been effected pursuant to a notification by the International Bureau to that national Office.

(2) [*Annotation and Publication by the International Bureau*] The International Bureau shall, as provided in the Regulations, make the appropriate annotation in the International Register of Marks and publish a notice concerning such annotation.

(3) [*Lack of Annotation and Publication*] (a) Until the said annotation and publication are effected, any recording referred to in pargraph (1) shall not be effective in respect of any third party unless such third party was actually aware of the subject matter of the said recording.

(b) Notwithstanding subparagraph (a), the national law of any Contracting State may provide that recordings in its own register referred to in paragraph (1) shall be effective in respect of the residents of that State even before the annotation and publication referred to in subparagraph (a) are effected.

Article 21

Preservation of Rights Acquired Through National Registration

(1) [*Rights Preserved*] If, at the international registration date or the recording date of the later designation, as the case may be, the owner of the international registration of a mark owns, in any designated State, a registration of the same mark in the national register of marks ("national registration"), his rights under this Treaty shall be deemed to include in respect of that State all rights, particularly any priority right, existing under the national registration, and, subject to paragraph (4), shall be deemed to continue to include them even where the national registration subsequently expires. The foregoing provision shall apply to the extent that the goods and/or services referred to in respect of the said State in the international registration are, in fact, covered by the list of goods and/or services referred to in the said national registration.

(2) [*Procedural Details*] The applicant or the owner of the international registration of a mark may, as provided in the Regulations, make a declaration stating that he owns national registrations of the same mark in certain designated States and identifying such registrations. The declaration may be included in the international application or the request for the recording of later designations or it may be filed separately. It shall, as provided in the regulations, be accompanied by a certified copy of each national registration referred to in the declaration. The International Bureau shall record and publish the declaration and shall notify the interested designated Offices accordingly, as provided in the Regulations. Those Offices shall refer to the declaration in their respective national registers of marks in connection with the said national registrations.

(3) [*Immunity Against Refusal*] (a) Where a declaration under paragraph (2) has been notified to the designated Office and the conditions referred to in paragraph (1) are complied with, and to the extent that they are complied with, the effects provided for in Article 11 may not, subject to subparagraph (b), be refused under Article 12.

(b) Where, in any designated State, there is more than one national register of marks or the national register of marks has several parts and the national registration referred to in paragraph (1) exists in a national register or a part of that register which affords less than the highest degree of protection, subparagraph (a) shall apply only if the declaration under paragraph (2) relates to a registration in the same national register or in the same part of that register.

(4) [*Expiration of the National Registration*] Where the national registration referred to in paragraph (1) expires, the rights under this Treaty shall be deemed to continue to include the rights which existed under the said national registration only where a declaration referred to in paragraph (2) has been filed not later than within one year from the expiration of the said national registration.

Article 22

Preservation of Rights Acquired Through International Registration Under the Madrid Agreement

(1) [*Rights Preserved*] If, at the international registration date or the recording date of the later designation, as the case may be, the owner of the international registration of a mark effected under this Treaty owns, in respect of any designated State, an international registration of the same mark effected under the Madrid Agreement ("Madrid Registration"), his rights under this Treaty shall be deemed to include in respect of that State all rights, particularly any priority right, existing under the Madrid registration and, subject to paragraph (4), shall be deemed to continue to include them even where the Madrid registration subsequently expires. The foregoing provision shall apply to the extent that the goods and/or services referred to in respect of the said State in the international registration under this Treaty are, in fact, covered by the list of goods and/or services referred to in respect of the said State in the Madrid registration.

(2) [*Procedural Details*] The applicant seeking the international registration of a mark under this Treaty, or the owner of the international registration of a mark under this Treaty, may, as provided in the Regulations, make a declaration stating that he owns a Madrid registration of the same mark in respect of certain designated States and identifying such registration. The declaration may be included in the international application or the request for the recording of later designations or it may be filed separately. The International Bureau shall record and publish the declaration, as provided in the Regulations.

(3) [*Immunity Against Refusal*] Where a declaration under paragraph (2) has been notified to the designated Office and the conditions referred to in paragraph (1) are complied with, and to the extent that they are complied with, the effects provided for in Article 11 may not be refused under Article 12, unless protection under the Madrid Agreement has been refused or as long as refusal under that Agreement is still possible.

(4) [*Expiration of the Madrid Registration*] Where the Madrid registration referred to in paragraph (1) expires, the rights under this Treaty shall be deemed to continue to include the rights which existed under the Madrid Agreement only where a declaration referred to in paragraph (2) has been filed not later than within one year from the expiration of the said Madrid registration.

Article 23

Preservation of the Right to Use the Madrid Agreement

Where any natural person or legal entity has the right to seek international registration under the Madrid Agreement or to renew his or its international registration under that Agreement, such right shall not be affected by this Treaty in any Contracting State party also to the Madrid Agreement.

Article 24

National Registrations Based on International Registrations

(1) [*Preservation of Rights Acquired Through International Registration*] The owner of the international registration of a mark having the effect provided for in Article 11(2) in any Contracting State may, at any time and with reference to such international registration, apply for the registration of the same mark in the national register of marks of that State, and such national registration shall, provided the requirements of the national law are complied with, be granted in that State, and the rights of the said owner under such national registration shall be deemed to include all rights, particularly any priority right, existing under the said international registration in the said State, even where the international registration subsequently expires in respect of that State. The foregoing provision shall apply to the extent that the goods and/or services listed in the said application are in fact covered by the list of goods and/or services referred to in the said international registration in respect of the said State.

(2) [*Procedural Details*] Until the expiration of the effect referred to in paragraph (a), Article 20(1) and (2) shall apply also in connection with any national registration effected under that paragraph.

Article 25

Regional Marks

(1) [*Designation Having the Effect of an Application for a Regional Mark*] (a) Where the residents or nationals of all Contracting States are given the right under a treaty providing for the registration of regional marks ("regional treaty") to file applications and obtain registrations under such regional treaty by way of this Treaty, any Contracting State party to such regional treaty may declare, as provided in the Regulations, that its designation under the Treaty shall have the same effect as if the mark had been applied for a regional mark effective in that State.

(b) Where the international application is for a regional mark and, under the regional treaty, the applicant cannot limit his application to some only of the States party to that treaty, designation of one or more of those States shall be treated as designation of all the States party to that treaty, and withdrawal of the designation, or renunciation of the recording of the designation, or cancellation of the designation for any other reason of any such State shall have the effect of withdrawal, renunciation or cancellation with respect to the designation of all such States.

(2) [*Fees*]Where the use of this Treaty results in effects under a regional treaty. Article 18(2) to (5) shall apply *mutatis mutandis* and subject to the following provisions:

(i) The beneficiary of the fees referred to in Article 18(2) shall be the intergovernmental authority administering the regional treaty.

(ii) The choice referred to in Article 18(2) shall be exercised by the intergovernmental authority administering the regional treaty.

(iii) Where, under a regional treaty, fees vary according to the number of the States to which the effect of the regional registration extends, the amounts of individual fees may vary not only according to Article 18(3)(c) but also according to the number of the designated States party to the said regional treaty, provided that the total amount referred to in Article 18(3)(e) and the amount of the renewal fee referred to in Article 18 (3)(f) shall be that of the fees prescribed in the regional treaty with respect to as many States as are designated States.

Article 26

Representation Before the International Bureau

(1) [*Possibility of Representation*] Applicants and owners of international registrations may, as provided in the Regulations, be represented before the International Bureau by any natural person or legal entity empowered by them to that effect (hereinafter referred to as "the duly appointed representative").

(2) [*Effect of Appointment*] Any invitation, notification or other communication addressed by the International Bureau to the duly appointed representative shall have the same effect as if it had been addressed to the applicant or the owner of the international registration. Any application, request, demand, declaration or other document whose signature by the applicant or the owner of the international registration is required in proceedings before the International Bureau, except the document appointing the representative or revoking his appointment, may be signed by his duly appointed representative, and any communication from the duly appointed representative to the International Bureau shall have the same effect as if it had been effected by the applicant or the owner of the international registration.

(3) [*Several Applicants or Owners*] (a) Where there are several applicants, they shall appoint a common representative. In the absence of such appointment, the applicant first named in the international application shall be considered the duly appointed representative of all the applicants.

(b) Where there are several owners of the international registration, they shall appoint a common representative. In the absence of such appointment, the natural person or legal entity first named among the said owners in the International Register of Marks shall be considered the duly appointed representative of all the owners of the international registration.

(c) Subparagraph (b) shall not apply to the extent that the owners own the international registration in respect of different designated States, or in respect of different goods and/or services, or in respect of different States and different goods and/or services.

Article 27

Conditions for and Effect of Priority Claim Contained in the International Application or in the Request for the Recording of Later Designations

The conditions for and the effect of any priority claimed in the international application or in the request for the recording of later designations shall be as provided for in respect of marks in Article 4 of the Stockholm (1967) Act of the Paris Convention for the Protection of Industrial Property.

Article 28

International Application as Possible Basis of Priority Claim

(1) [*Basis of Claim*] Any international application which is regular shall be equivalent to a regular national filing within the meaning of Article 4 of the Stockholm (1967) Act of the Paris Convention for the Protection of Industrial Property and shall be recognized as the basis of a priority claim as provided for in that Act.

(2) [*Criterion of "Regular" International Application*]. For the purposes of paragraph (1), an international application shall be regarded as regular if it is adequate to establish the date on which it was filed with the International Bureau or, where it was filed through the intermediary of a national office, with that Office.

Article 29

Delay in Meeting Time Limits

(1) [*Delays That Must Be Excused by Contracting States*] Subject to paragraph (3), any Contracting State shall, as far as that State is concerned, excuse, for reasons admitted under its national law, any delay in meeting any time limit fixed in this Treaty or the Regulations.

(2) [*Delays That May Be Excused by Contracting States*] Subject to paragraph (3), any Contracting State may, as far as that State is concerned, excuse, for reasons other than those admitted under its national law, any delay in meeting any time limit fixed in this Treaty or the Regulations.

(3) [*Delays That Cannot Be Excused*] Paragraphs (1) and (2) shall not apply to any delay in meeting any time limit provided for in Article 7(1), Article 7(6)(iii), Article 8(1) and Article 12(2)(a)(i).

(4) [*International Bureau*] The International Bureau shall not excuse delays by applicants, owners of international registrations or national Offices in meeting any time limit fixed in this Treaty and the Regulations.

Article 30

Correction of Errors of the International Bureau

(1) [*Petition for Redress*] Subject to Article 9, where, in the opinion of the applicant or the owner of the international registration, the International Bureau has, in applying the provisions of this Treaty and the Regulations, made an error which may affect the interests of such applicant or owner in respect of any designated State, the said applicant or owner may, within the time limit fixed in the Regulations, filed with the national Office of such State a petition for the purpose of requesting the International Bureau to correct the error in respect of said State.

(2) [*Redress*] If the national Office or any other competent authority of the said State finds that the International Bureau has in fact made the error which is the subject of the petition, the said national Office shall request the International Bureau to correct that error in respect of that State and the International Bureau shall proceed as requested.

(3) [*Procedure*] The applicant or the owner of the international registration who files a petition under paragraph (1) shall, at the time of filing the petition, transmit a copy of that petition to the International Bureau. If the petition relates to a mark which is already registered in the International Register of Marks, the International Bureau shall, as provided in the Regulations, record and publish the fact that it received a copy of such petition; otherwise it shall keep the said copy in its files.

(4) [*Procedure: Continued*] Where the correction requires a corresponding modification of the International Register of Marks, the International Bureau shall modify that Register accordingly. Furthermore, where the correction affects any information which has been the subject of a publication by the International Bureau, that Bureau shall publish the correction.

Article 31

Notification of Owner of International Registration

Any matter recorded by the International Bureau in respect of an international registration shall be the subject of a corresponding notification to the owner of the international registration. Details may be provided in the Regulations.

CHAPTER II: ADMINISTRATIVE PROVISIONS

Article 32

Assembly

(1) [*Composition*] (a) The Assembly shall consist of the Contracting States.

(b) The Government of each Contracting State shall be represented by one delegate, who may be assisted by alternate delegates, advisors, and experts.

(2) [*Tasks*] (a) The Assembly shall:

(i) deal with all matters concerning the maintenance and development of the Union and the implementation of this Treaty;

(ii) excercise such rights and perform such tasks as are specially conferred upon it or assigned to it under this Treaty;

(iii) give directions to the Director General concerning the preparation for revision conferences;

(iv) review and approve the reports and activities of the Director General concerning the Union, and give him all necessary instructions concerning matters within the competence of the Union;

(v) determine the program and adopt the budget of the Union, and approve its final accounts;

(vi) adopt the financial regulations of the Union;

(vii) establish such committees and working groups as it deems appropriate to facilitate the work of the Union and of its organs;

(viii) determine which States other than Contracting States and which intergovernmental and international non-governmental organizations shall be admitted to its meetings as observers;

(ix) decide upon the establishment of any agency of the International Bureau in any place outside Geneva (Switzerland) for the purpose of receiving documents and payments under this Treaty and the Regulations with the same effect as if they had been received by the International Bureau in Geneva;

(x) take any other appropriate action designed to further the objectives of the Union and perform such other functions as are appropriate under this Treaty.

(b) With respect to matters which are of interest also to other Unions administered by the Organization, the Assembly shall make its decisions after having heard the advice of the Coordination Committee of the Organization.

(3) [*Representation*] A delegate may represent, and vote in the name of, one State only.

(4) [*Vote*] Each Contracting State shall have one vote.

(5) [*Quorum*] (a) One-half of the Contracting States shall constitute a quorum.

(b) In the absence of the quorum, the Assembly may make decisions but, with the exception of decisions concerning its own procedure, all such decisions shall take effect only if the quorum and the required majority are attained through voting by correspondence as provided in the Regulations.

(6) [*Majority*] (a) Subject to Article 34(5)(f), Article 35(2)(b) and (c), and Article 38(2)(b), the decisions of the Assembly shall require a majority of the votes cast.

(b) Abstentions shall not be considered as votes.

(7) [*Sessions*] (a) The Assembly shall meet once in every calendar year in ordinary session upon convocation by the Director General, preferably during the same period and at the same place as the Coordination Committee of the Organization.

(b) The Assembly shall meet in extraordinary session upon convocation by the Director General, either on the Director General's own initiative or at the request of one-fourth of the Contracting States.

(8) [*Rules of Procedure*] The Assembly shall adopt its own rules of procedure.

Article 33

International Bureau

(1) [*Tasks*] The International Bureau shall:

(i) Perform the administrative tasks concerning the Union; in particular, it shall perform such tasks as are specially assigned to it under this Treaty or by the Assembly;

(ii) provide the secretariat of revision conferences, of the Assembly, of the committees and working groups established by the Assembly, and of any other meeting convened by the Director General and dealing with matters of concern to the Union.

(2) [*Director General*] The Director General shall be the chief executive of the Union and shall represent the Union.

(3) [*Meetings Other Than Sessions of the Assembly*] The Director General shall convene any committee and working group established by the Assembly and all oth-

er meetings dealing with matters of concern to the Union.

(4) [*Role of International Bureau in the Assembly and Other Meetings*] (a) The Director General and any staff member designated by him shall participate, without the right to vote, in all meetings of the Assembly, the committees and working groups established by the Assembly, and any other meeting convened by the Director General and dealing with matters of concern to the Union.

(b) The Director General or a staff member designated by him shall be ex officio secretary of the Assembly, and of the committees, working groups and other meetings referred to in subparagraph (a).

(5) [*Revision Conferences*] (a) The Director General shall, in accordance with the directions of the Assembly, make the preparations for revision conferences.

(b) The Director General may consult with intergovernmental and international non-governmental organizations concerning the said preparations.

(c) The Director General and persons designated by him shall take part, without the right to vote, in the discussions at revision conferences.

(d) The Director General or a staff member designated by him shall be ex officio secretary of any revision conference.

(6) [*Assistance by National Offices*] The Regulations may specify the services that national Offices shall render in order to assist the International Bureau in carrying out its tasks under this Treaty.

Article 34
Finances

(1) [*Budget*] (a) The Union shall have a budget.

(b) The budget of the Union shall include the income and expenses proper to the Union, its contribution to the budget of expenses common to the Unions, and any sum made available to the budget of the Conference of the Organization.

(c) Expenses not attributable exclusively to the Union but also to one or more other Unions administered by the Organization shall be considered as expenses common to the Unions. The share of the Union in such common expenses shall be in proportion to the interest the Union has in them.

(2) [*Coordination with Other Budgets*] The budget of the Union shall be established with due regard to the requirements of coordination with the budgets of the other Unions administered by the Organization.

(3) [*Sources of Income*] The budget of the Union shall be financed from the following sources:

(i) fees and other charges due for services rendered by the International Bureau in relation to the Union;
(ii) sale of, or royalties on, the publications of the International Bureau concerning the Union;
(iii) gifts, bequests, and subventions;
(iv) rents, interests, and other miscellaneous income.

(4)(a) [*Self-Supporting Financing*] The amounts of fees and charges due to the International Bureau and the prices of its publications shall be so fixed that they should, under normal circumstances, be sufficient to cover the expenses of the International Bureau connected with the administration of this Treaty.

(b) [Continuation of Budget; Reserve Fund] If the budget is not adopted before the beginning of a new financial period, it shall be at the same level as the budget of the previous year, as provided in the financial regulations. If the income exceeds the expenses, the difference shall be credited to a reserve fund.

(5) [*Working Capital Fund*] (a) The Union shall have a working capital fund which shall be constituted by a single payment made by each Contracting State. If the fund becomes insufficient, the Assembly shall arrange to increase it. If part of the fund is no longer needed, it shall be reimbursed.

(b) The amount of the initial payment of each Contracting State to the said fund or of its participation shall be proportionate to the number of international applications which, among the total number of such applications, it is estimated that its residents will file. The participations of all Contracting States in the fund may be revised from time to time by the Assembly to make them correspond to the number of international applications actually filed by the residents of the various States since the date of the initial payments or the last such revision.

(c) The proportion and the terms of payment shall be fixed by the Assembly on the proposal of the Director General and after it has heard the advice of the Coordination Committee of the Organization.

(d) If loans from the reserve fund permit the constitution of a working capital fund that is sufficient, the Assembly may suspend the application of subparagraphs (a), (b) and (c).

(e) Any reimbursement under subparagraph (a) shall be proportionate to the amounts paid by each Contracting State, taking into account the dates at which they were paid.

(f) Any decision under subparagraphs (a) to (d) shall require two-thirds of the votes cast.

(c) [*Advances by Host Country*] (a) In the headquarters agreement concluded with the State on the territory of which the Organization has its headquarters, it shall be provied that, whenever the working capital fund is insufficient, such State shall grant advances. The amount of those advances and the conditions on which they are granted shall be the subject of separate agreements, in each case, between such State and the Organization. As long as it remains under the obligation to grant advances, such State shall have an ex officio seat in the Assembly if it is not a Contracting State.

(b) The State referred to in subparagraph (a) and the Organization shall each have the right to denounce the obligation to grant advances, by written notification. Denunciation shall take effect three years after the end of the year in which it has been notified.

(7) [*Auditing of Accounts*] The auditing of the accounts shall be effected by one or more of the contracting States or by external auditors, as provided in the financial regulations. They shall be designated, with their agreement, by the Assembly.

Article 35
Regulations

(1) [*Adoption of Regulations*] The Regulations adopted at the same time as this Treaty are annexed to this Treaty.

(2) [*Amending the Regulations*] The Assembly may amend the Regulations. Amendments may consist also of new provisions added to the Regulations concerning:

(i) matters in respect of which this Treaty expressly refers to the Regulations or expressly provides that they are or shall be prescribed,
(ii) any administrative requirements, matters or procedures,
(iii) any details useful in the implementation of this Treaty.

(b) Subject to subparagraphs (c) and (d), the amendment of the Regulations shall require two-thirds of the votes cast.

(c) The amendment of any provision of the Regulations affecting the amount of the fees referred to in Article 18(2), as well as the distribution among the national Offices and the transfer to them of such fees, shall require three-fourths of the votes cast. Where the amendment relates to fees referred to in Article 18(2) but those fees are fees to which only some of the Contracting States are entitled, only the Contracting States entitled thereto shall, for the purposes of the quorum, be considered Contracting States, and only they shall have the right to vote.

(d) The amendment of any provisions of the Regula-

tions concerning declarations of intent to use the mark and declarations of actual use of the mark shall require that it be accepted by a majority of two-thirds of the votes cast and that no Contracting State whose national law allows or requires the filing of such declarations vote against the proposed amendment.

(3) [*Conflict Between the Treaty and the Regulations*] In the case of conflict between the provisions of this Treaty and those of the Regulations, the former shall prevail.

Article 36

Search Service

(1) [*Tasks*] The International Bureau shall maintain a Service whose task shall be to search for anticipations among marks registered under this Treaty, and, to the extent authorized by the Assembly, other marks as well.

(2) [*Fees; Availability*] Searches shall be made on request and shall be subject to the payment of fees fixed under the Regulations. The Service shall be at the disposal of any Government, national Office, other legal entity, or natural person.

(3) [*Self-Supporting Financing*] The amounts of the fees referred to in paragraph (2) shall be so fixed that they should be sufficient to cover the expenses of the International Bureau connected with the Service.

CHAPTER III: REVISION AND AMENDMENT

Article 37

Revision of the Treaty

(1) [*Revision Conferences*] This Treaty may be revised from time to time by conferences of the Contracting States.

(2) [*Convocation*] The convocation of any revision conference shall be decided by the Assembly.

(3) [*Provisions That Can Be Amended Also by the Assembly*] The provisions referred to in Article 38(1)(a) may be amended either by a revision conference or according to Article 38.

Article 38

Amendment of Certain Provisions of the Treaty

(1) [*Proposals*] (a) Proposals for the amendment of the length of any time limit fixed in Chapter I of this Treaty, other than those referred to in Articles 12(2) and 19(3), or for any amendment to Articles 32(5) and (7), 33, 34 and 36, may be initiated by any Contracting State or by the Director General.

(b) Such proposals shall be communicated by the Director General to the Contracting States at least six months in advance of their consideration by the Assembly.

(2) [*Adoption*] (a) Amendments to the provisions referred to in paragraph (1) shall be adopted by the Assembly.

(b) Adoption shall require three-fourths of the votes cast, provided that adoption of any amendment of the length of the time limit fixed in Articles 7(1), 7(3)(c), 7(6)(iii) and 8(1) shall require that no Contracting State vote against the proposed amendment.

(3) [*Entry Into Force*] Any amendment to the provisions referred to in paragraph (1) shall enter into force one month after written notifications of acceptance, effected in accordance with their respective constitutional processes, have been received by the Director General from three-fourths of the Contracting States members of the Assembly at the time the Assembly adopted the amendment.

(b) Any amendment to the said Articles thus accepted shall bind all the Contracting States which were Contracting States at the time the amendment was adopted by the Assembly, provided that any amendment increasing the financial obligations of the said Contracting States shall bind only those which have notified their acceptance of such amendment.

(c) Any amendment which has been accepted and which has entered into force in accordance with subparagraph (a) shall bind all States which become Contracting States after the date on which the amendment was adopted by the Assembly.

CHAPTER IV: FINAL PROVISIONS

Article 39

Becoming Party to the Treaty

(1) [*Ratification, Accession*] Any State member of the International Union for the Protection of Industrial Property may become party to this Treaty by:

(i) signature followed by the deposit of an instrument of ratification, or
(ii) deposit of an instrument of accession.

(2) [*Deposit of Instrument*] Instruments of ratification or accession shall be deposited with the Director General.

(3) [*Reference to Other States*] (a) Any instrument of ratification or accession may be accompanied by a declaration to the effect that it shall be considered to have been deposited only when another State, or either one of two other States, or both of two other States, specified by name, shall have deposited instruments of ratification or accession. The instrument of ratification or accession of any State having made such a declaration shall be considered to have been deposited

(i) on the day on which the specified State, or one of the two specified States, or the second specified State, as the case may be, deposits its instrument of ratification or accession,
(ii) where the instrument of ratification or accession of any specified State itself is accompanied by a declaration concerning other States, on the day on which the instrument of ratification or accession of the said specified State is to be considered to have been deposited.

(b) Any declaration made under subparagraph (a) may be withdrawn at any time or, if it was made in respect of two States, may be limited to one of them. The instrument of ratification or accession of any State withdrawing its declaration shall be considered to have been deposited on the day on which the withdrawal is notified to the Director General, whereas the instrument of ratification or accession of any State limiting its declaration shall be considered to have been deposited on the day on which the remaining State deposits its instrument of ratification of accession. If the instrument of ratification or accession of the remaining State has already been deposited, the instrument of ratification or accession of the State limiting its declaration shall be considered to have been deposited on the day on which the limitation is notified to the Director General.

(4) [*Certain Territories*] (a) The provisions of Article 24 of the Stockholm (1967) Act of the Paris Convention for the Protection of Industrial Property shall apply to this Treaty.

(b) Subparagraph (a) shall in no way be understood as implying the recognition or tacit acceptance by a Contracting State of the factual situation concerning a territory to which this Treaty is made applicable by another Contracting State by virtue of the said subparagraph.

Article 40

Transitional Provisions

(1) [*Declaration by Certain Developing Countries*] Any State party to the Paris Convention for the Protection of Industrial Property but not party to this Treaty which, in conformity with the established practice of the General Assembly of the United Nations, is regarded as a developing country may make a declaration addressed to the Director General stating that it wishes to avail itself of the right provided for in paragraph (2) and that it intends to become party to this Treaty at the latest with-

in two years from the date on which that right, according to the applicable provisions of paragraphs (5) to (8), ceases to be effective in respect of that State.

(2) [*Effect of Declaration*] Residents and nationals of any State having made a declaration according to paragraph (1) shall, notwithstanding Article 4(1), have the right to file international applications and to own international registrations under this Treaty.

(3) [*Time of Filing Declaration*] The declaration referred to in paragraph (1) shall be filed with the Director General at any time before June 12, 1978.

(4) [*Commencement of Effect*] If filed before the entry into force of this Treaty according to Article 41(1), the declaration referred to in paragraph (3) shall become effective on the date of the said entry into force. If filed after such entry into force, the said declaration shall become effective three months after the date of its filing.

(5) [*Expiration of Effect*] Subject to paragraphs (6) to (8), the right provided for in paragraph (2) shall be effective until the expiration of whichever of the following two periods expires later:

(i) a period of ten years from the date (June 12, 1973) of the signature of this Treaty,

(ii) a period of five years from the entry into force of this Treaty according to Article 41(1).

(6) [*Possible Prolongation of Effect*] (a) The period referred to in paragraph (5) may be prolonged twice for periods of five years each by decisions of the Special Conference as defined in subparagraph (b) in respect of those States having made the declaration referred to in paragraph (1) whose residents or nationals have filed an average of not more than two hundred international applications per year during the three consecutive years, as defined in subparagraph (d).

(b) The Special Conference shall consist of the States which, at the time it meets, are Contracting States and those States having made a declaration under paragraph (1) which fulfill, in respect of the number of international applications, the conditions set forth in subparagraph (a).

(c) The decision of the Special Conference shall require a simple majority of the votes cast. The said Conference shall meet upon convocation by the Director General during the year preceding the year in which:

(i) the period referred to in paragraph (5) expires, and

(ii) the first five-year period referred to in subparagraph (a) expires if prolongation for that period had been decided.

(d) The three consecutive years referred to in subparagraph (a) shall, in respect of each of the two possible decisions, be the fourth, third and second calendar years before the year in which the decision is made.

(7) [*Possible Further Prolongation of Effect*] The Assembly, in exceptional cases and upon request, may decide to prolong for two further periods of five years each the application of the right under paragraph (2) in respect of any State which, at the time the decision is made, benefits from the said right and which is then regarded as one of the least developed among the developing countries.

(8) [*Termination of Effect for Special Reasons*] Notwithstanding paragraphs (4) to (7), the right provided for in paragraph (2) shall cease to exist on the last day of the calender year which follows the year in which any State having made a declaration under paragraph (1):

(i) ceases to be regarded as a developing country in conformity with the established practice of the General Assembly of the United Nations, or

(ii) denounces the Paris Convention for the Protection of Industrial Property.

Article 41

Entry Into Force of the Treaty

(1) [Initial Entry Into Force] This Treaty shall enter into force six months after five States have deposited their instruments of ratification or accession.

(2) [*States Not Covered by the Initial Entry Into Force*] Any State which is not among those referred to in paragraph (1) shall become bound by this Treaty three months after the date on which it has deposited its instrument of ratification or accesssion.

Article 42

Reservations to the Treaty

Subject to Article 46(2), no reservations to this Treaty are permitted.

Article 43

Denunciation of the Treaty

(1) [*Notification*] Any contracting State may denounce this Treaty by notification addressed to the Director General.

(2) [*Effective Date*] Denunciation shall take effect one year after the day on which the Director General has received the notification.

(3) [*Moratorium on Denunciation*] The right of denouncing this Treaty provided for in paragraph (1) shall not be exercised by any Contracting State before the expiration of five years from the date on which it becomes bound by this Treaty.

(4) [*Continuation of the Effects of the Treaty*] (a) The effects of this Treaty on any mark enjoying the benefits of this Treaty on the day preceding the day on which the denunciation by any Contracting State takes effect shall continue in that State until the expiration of the initial or renewal term which was running on that date.

(b) Where the right to own the international registration of a mark is based on the owner's being a resident or national of the Contracting State referred to in subparagraph (a), the benefits of this Treaty shall, in all designated States, continue until the day on which the period referred to in subparagraph (a) expires in respect of that mark.

Article 44

Signature and Languages of the Treaty

(1) [*Original Texts*] This Treaty shall be signed in a single original in the English and French languages, both texts being equally authentic.

(2) [*Official Texts*] Official texts shall be established by the Director General, after consultation with the interested Governments, in the German, Italian, Japanese, Portuguese, Russian and Spanish languages, and such other languages as the Assembly may designate.

(3) [*Time Limit for Signature*] This Treaty shall remain open for signature at Vienna until December 31, 1973.

Article 45

Depositary Functions

(1) [*Deposit of the Original Texts*] The original of this Treaty, when no longer open for signature, shall be deposited with the Director General.

(2) [*Certified Copies*] The Director General shall transmit two copies, certified by him, of this Treaty to the Governments of the States party to the Paris Convention for the Protection of Industrial Property and, on request, to the Government of any other State.

(3) [*Registration of the Treaty*] The Director General shall register this Treaty with the Secretariat of the United Nations.

(4) [*Amendments*] The Director General shall transmit two copies, certified by him, of any amendment to this Treaty to the Governments of the Contracting States and, on request, to the Government of any other State.

Article 46

Settlement of Disputes

(1) [*International Court of Justice*] Any dispute between two or more Contracting States concerning the interpretation or application of this Treaty or the Regulations, not settled by negotiation, may, by any one of the States concerned, be brought before the International Court of Justice by application in conformity with the Statute of the Court, unless the States concerned agree on some other method of settlement. The Contracting State bringing the dispute before the Court shall inform the International Bureau; the International Bureau shall bring the matter to the attention of the other Contracting States.

(2) [*Reservation*] Each Contracting State may, at the time it signs this Treaty or deposits its instrument of ratification or accession, declare by notification deposited with the Director General that it does not consider itself bound by paragraph (1). With regard to any dispute between any Contracting State having made such a declaration and any other Contracting State, paragraph (1) shall not apply.

(3) [*Withdrawal of Reservation*] Any Contracting State having made a declaration in accordance with paragraph (2) may, at any time, withdraw its declaration by notification addressed to the Director General.

Article 47

Notifications

The Director General shall notify the Governments of the States party to the Paris Convention for the Protection of Industrial Property of:

(i) signatures under Article 44;

(ii) deposits of instruments of ratification or accession under Article 39(2) and of any declaration accompanying them under Article 39(3)(a) and any withdrawal or limitation of such declarations made under Article 39(3)(b);

(iii) the date of entry into force of this Treaty under Article 41(1) and any amendment under Article 38(3)(a);

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Rule 1

Abbreviated Expressions

1.1 *"Treaty"*

In these Regulations, the word "Treaty" means the Trademark Registration Treaty.

1.2 *"Chapter" and "Article"*

In these Regulations, the words "Chapter" and "Article" refer to the specified Chapter or Article of the Treaty.

1.3 *"Associations"*

In these Regulations, references to legal entities where such references concern them in their capacity of applicants or owners of international registrations shall be construed as references also to associations referred to in Article 4(5).

1.4 *"Gazette"*

In these Regulations, the word "Gazette" means the official Gazette of the International Bureau referred to in Article 2(ix).

1.5 *"Table of Fees"*

In these Regulations, the words "Table of Fees" mean the table of fees annexed hereto.

RULES CONCERNING CHAPTER I

Rule 2

Representation Before The International Bureau

2.1 *Number of Duly Appointed Representatives*

(a) The applicant and the owner of the international registration may appoint only one representative.

(b) Where several natural persons or legal entities have been indicated as representatives by the applicant or the owner of the international registration, the natural person or legal entity first mentioned in the document in which they are indicated shall be regarded as the only duly appointed representative.

(c) Where the representative is a partnership or firm composed of attorneys or patent or trademark agents, it shall be regarded as one representative.

2.2 *Form of Appointment*

(a) A representative shall be regarded as a "duly appointed representative" if his appointment complies with the prescriptions of paragraphs (b) to (e).

(b) The appointment of any representative shall require:

(i) that his name appear as that of a representative in the international application and that such application bear the signature of the applicant, or

(ii) that a separate power of attorney (i.e., a document appointing the representative), signed by the applicant or the owner of the international registration, be filed with the International Bureau.

(c) Where there are several applicants or owners of the international registration, the document containing or constituting the appointment of their common representative shall be signed by all of them.

(d) Any document containing or constituting the appointment of a representative shall indicate his name and his address. Where the representative is a natural person, his name shall be indicated by his family name and given name(s), the family name being indicated before the given name(s). Where the representative is a legal entity or a partnership or firm of attorneys or patent or trademark agents, "name" shall mean the complete name of the legal entity or partnership or firm. The address of the representative shall be indicated in the same manner as that provided for in respect of the applicant in Rule 5.2(c).

(e) The document containing or constituting the appointment shall contain no words which, contrary to Article 26(2), would limit the powers of the representative, in particular by indicating a time limit or event after which the appointment would expire, by excluding certain matters from the powers of the representative, or by specifying some only of the powers which any representative has under the said Article.

(f) Where the appointment does not comply with the requirements referred to in paragraphs (b) to (e), it shall be treated by the International Bureau as if it had not been made, and the applicant or the owner of the international registration as well as the natural person, the legal entity, the partnership or firm which was indicated as the representative in the purported appointment shall be informed of this fact by the International Bureau.

(g) The Administrative Instructions shall provide recommended wording for the appointment.

2.3 *Revocation or Renunciation of Appointment*

(a) The appointment of any representative may be revoked at any time by the natural person who or legal entity which has appointed that representative. The revocation shall be effective even if only one of the natural persons who or legal entities which have appointed the representative revokes the appointment.

(b) Revocation shall require a written document signed by the natural person or the legal entity referred to in the preceding paragraph. It shall be effective, as far as the International Bureau is concerned, as from the date of the receipt of the said document by that Bureau.

(c) The appointment of a representative as provided in Rule 2.2 shall be regarded as the revocation of any earlier appointment of any other representative. The appointment shall preferably indicate the name of the other earlier appointed representative.

(d) Any representative may renounce his appointment through a notification signed by him and addressed to the International Bureau.

2.4 *General Powers of Attorney*

The appointment of a representative in a separate power of attorney (i.e., a document appointing the representative) may be general in the sense that it relates to more than one international application and more than one international registration in respect of the same natural person or legal entity. The identification of such applications and registrations, as well as other details in respect of such general power of attorney and of its revocation or renunciation, shall be provided in the Administrative Instructions. The Administrative Instructions may provide for a fee payable in connection with the filing of general powers of attorney.

2.5 *Substitute Representative*

(a) The appointment of the presentative referred to in Rule 2.2(b) may indicate also one or more natural persons as substitute representatives.

(b) For the purposes of the second sentence of Article 26(2), substitute representatives shall be considered as representatives.

(c) The appointment of any substitute representative may be revoked at any time by the natural person who or legal entity which has appointed the representative or by the representative. Revocation shall require a written document signed by the said natural person, legal entity or representative. It shall be effective, as far as the International Bureau is concerned, as from the date of the receipt of the said document by that Bureau.

Rule 3

International Register of Marks

3.1 *Contents of the International Register*

The International Register of Marks shall contain, in espect of each mark registered therein:

(i) all the indications that must or may be furnished under the Treaty or these Regulations, and that have in

fact been furnished, to the International Bureau, and, where relevant, the date on which such indications were received by that Bureau,

(ii) the amount of all fees received and the date or dates on which they were received by the International Bureau,

(iii) the number and date of the international registration and the numbers, if any, and the dates of all recordings relating to that registration.

3.2 *Keeping of the International Register*

The administrative Instructions shall regulate the establishment of the International Register of Marks, and, subject to the Treaty and these Regulations, shall specify the form in which it shall be kept and the procedure which the International Bureau shall follow for inscribing recordings therein and for preserving it from loss or other damage.

Rule 4

Applicant

4.1 *The Same Applicant for All Designated States*

(a) The applicant shall be the same for the purposes of all the designated States.

(b) Where the international application, as filed, does not indicate the same applicant for the purposes of all the designated States, that application shall be treated as if only the state first mentioned therein, and any other State for the purposes of which the same applicant is indicated as for the said first-mentioned state, had been designated.

Rule 5

Mandatory Contents of the International Application

5.1 *Indication that the International Application is Filed Under the Treaty*

The indication referred to in Article 5(1)(a)(i) shall be worded as follows: "The undersigned requests that the mark herein reproduced be registered in the International Register of Marks established under the Trademark Registration Treaty"; or it shall consist of a statement to the same effect.

5.2 *Indications Concerning the Applicant*

(a) The applicant's identity shall be indicated by his name. If the applicant is a natural person, his name shall be indicated by his family name and given name(s), the family name being indicated before the given name(s). If the applicant is a legal entity, its name shall be indicated by the full, official designation of the said entity.

(b) The applicant's residence and nationality shall be indicated by the name(s) of the State(s) of which he is a resident and of which he is a national.

(c) The applicant's address shall be indicated in such a way as to satisfy the customary requirements for prompt postal delivery at the indicated address and shall, in any case, consist of all the relevant administrative units up to, and including, the house number, if any. Where the national law of the designated State does not require the indication of the house number, failure to indicate such number shall have no effect in that State. Any telegraphic and teletype address and telephone number that the applicant may have should preferably be indicated. For each applicant, only one address shall be indicated; if several addresses are indicated, only the one first mentioned in the international application shall be considered.

5.3 *Reproduction of the Mark; Color; Transliteration*

(a) Where the mark consists only of letters of the Latin alphabet, Arabic or Roman numerals, and punctuation signs usual in connection with the Latin alphabet, and the applicant does not wish to claim any special graphic feature, the mark may be reproduced, for example by typing the letters, numerals and signs, on the sheet itself on which the international application appears. The use of small letters and capital letters shall be permitted, and shall be followed in the publications of the International Bureau.

(b) In cases other than that referred to above, the mark shall be reproduced on a sheet of paper of A4 size (29.7 cm x 21 cm.), separate from the sheet on which the text of the international application appears, and shall be attached to the latter sheet. The reproduction of the mark itself on the separate sheet shall not occupy a space larger than 10 centimeters horizontally and 10 centimeters vertically. The reproduction of the mark on the separate sheet shall be of a quality admitting of direct reproduction by photography and printing processes. The separate sheet shall indicate the name and address of the applicant.

(c) Where color is claimed, the international application shall contain a statement to that effect and shall be accompanied by

(i) either a reproduction of the mark in color in one copy satisfying the requirements set forth in paragraph (b),

(ii) or a reproduction of the mark in color in the number of copies fixed in the Administrative Instructions and a reproduction of the mark in black and white in one copy containing a description of the colors in words and signs as specified in the Adminstrative Instructions, all copies satisfying the requirements set forth in paragraph (b).

(d) Where the mark or a certain part of it is three-dimensional, the international application and the separate sheet containing the reproduction of the three-dimensional feature shall contain an indication to that effect.

(e) Where the mark is intended to be used, or also to be used, as a sound mark, the international application and any separate sheet containing the reproduction of the mark shall contain an indication to that effect.

(f) Where the mark consists of or contains matter in script other than Latin script or numbers expressed in forms other than Arabic or Roman, the international application shall also contain a transliteration of such matter in Latin script and Arabic numerals; the transliteration shall follow the English pronunciation if the international application is in English, and the French pronunciation if it is in French. If the International Bureau finds that such transliteration is incorrect or is missing and it is equipped to effect itself the said transliteration, it shall do so. In the latter case, however, it shall notify the applicant of its transliteration and invite him to make comments on it within one month from the date of the notification, and shall not proceed with the international registration before the expiration of the said period of one month.

5.4 *List of Goods and/or Services*

(a) Each of the groups of terms pertaining to the same class of the International Classification shall be preceded by an indication of the number of the class, and the various groups shall follow in the numerical order of the corresponding classes.

(b) If, in the list of goods and/or services contained in the international application as filed, the terms are not or not properly grouped as provided in Article 5(1)(a)(iv), the International Bureau shall, after having notified the applicant of its intention to do so and allowing him one month from the date of the notification to react to such notification, classify each term as required and constitute the required groups. If any of the terms does not permit classification in one class only of the International Classification, it shall be classified in each of the applicable classes.

(c) If the International Bureau finds that any term is incomprehensible, it shall notify the applicant of its finding and allow him one month from the date of the notification to submit either arguments to the effect that the term is comprehensible or a request that the incomprehensible term be deleted. If, on the basis of the said arguments or other considerations, the International Bu-

reau finds that the term is comprehensible, it shall treat it according to its comprehended meaning. Otherwise it shall delete it ex officio.

(d) The list of goods and/or services shall be the same for the purposes of all States designated in the international application as filed or as limited under Article 7(4)(b). Where the international application as filed or as limited under Article 7(4)(b) indicates different goods and/or services in respect of different designated States, that application shall be treated as if only the State first mentioned therein, and any other States for the purposes of which the same list of goods and/or services is indicated as for the said first-mentioned State, had been designated.

5.5 *Identification of States*

(a) Identification of any State shall consist in writing its name in the international application in a manner sufficiently clear for the purposes of identification.

(b) The identification of any designated State which is not a Contracting State shall be treated as if such State had not been identified.

5.6 *Choice Between National and Regional Marks*

(a) The availability of any choice referred to in Article 5(1)(a)(vi) shall be notified by the interested Contracting State to the International Bureau, and that Bureau shall publish a corresponding announcement.

(b) The choice referred to in Article 5(1)(a)(vi) shall be indicated by the words "national mark desired" or "regional mark desired," respectively, or by other words to that effect, appearing next to the name of the designated State to which the choice applies.

5.7 *Collective Marks and Certification Marks*

The indication referred to in Article 5(1)(a)(vii) shall consist of the words "collective mark desired" or "certification mark desired," respectively, or other words to that effect, appearing next to the name of the designated State to which the indication applies.

5.8 *Application Filed Through the Intermediary of a National Office*

(a) The indication referred to in Article 5(3)(b) shall be worded as follows: "The . . . [1] certifies that the present international application was filed with it on . . . [2]."

[1] Indicate the name of the national Office. [2] Indicate the date.

(b) The national Office of any Contracting State whose national law provides that international applications of residents of that State may be filed through the intermediary of the national Office of the said State shall, at least once a week, send to the International Bureau a note containing the following indications concerning each of the international applications filed with it since the sending of the last such note.

(i) the name of the applicant,
(ii) a reproduction of the mark,
(iii) the date on which the international application was filed with that Office,
(iv) the date on which the international application was mailed to the International Bureau.

(c) The notes referred to in paragraph (b) shall be numbered consecutively.

(d) If the International Bureau does not receive any of the international applications listed in any note within 15 days from the date on which it received such note, it shall inform the national Office accordingly.

Rule 6

Optional Contents of the International Application

6.1 *Naming of a Representative*

The international application may indicate a representative.

6.2 *Claiming of Priority*

(a) The declaration referred to in Article 5(1)(b) shall consist of a statement to the effect that the priority of an earlier application is claimed and shall indicate:

(i) where the earlier application is an application filed for the registration of a mark in the register of marks of a given country, the country in which it was filed; where the earlier application is an international application filed under the Treaty, a State designated therein; where the earlier application is an application for a regional mark, the authority with which it was filed and a State for which it was filed;
(ii) the date on which the earlier application was filed;
(iii) the number allotted to the earlier application.

(b) If the declaration does not indicate the country or State, and the date, referred to in paragraph (a)(i) and (ii), the International Bureau shall treat the declaration as if it has not been made.

(c) If the application number referred to in paragraph (a)(iii) is not indicated in the declaration but is furnished by the applicant or the owner of the international registration to the International Bureau prior to the expiration of the 10th month from the filing date of the said application, it shall be considered to have been included in the declaration and shall be published by the International Bureau.

6.3 *Declaration of Intent To Use the Mark*

(a) Any declaration made under Article 19(4)(a) shall consist of the following statement:

> "The undersigned applicant declares that (he) (it) intends to use the mark which is the subject of this international application himself (itself) and/or by and through persons whose use inures to his (its) benefit in commerce with and/or on the territory of . . . [1] on and/or in connection with the goods and/or services listed in this international application."

[1] If the declaration relates to all the States designated in the international application, insert "each of the States designated in this application"; otherwise, indicate those of the States designated in respect of which the declaration is made.

(b) It shall depend on the national law of each designated State whether any declaration to the same effect as but worded differently than in paragraph (a) shall produce the effect provided for in Article 19(4)(a) in that State.

6.4 *Declaration of Actual Use*

In respect of any designated State, the following statement, signed by the applicant, may be made and attached to the international application:

> "The undersigned applicant declares that the following mark . . . [1] which is the subject of the international application to which this declaration is attached is now in use by and through . . . [2] in commerce with and/or on the territory of . . . [3] on or in connection with the following goods and/or services listed in respect of such State . . . [4]; that such use commenced on . . . [5]; and that the mode and manner in which the mark is used is:
>
> on labels or tags affixed to and/or containers for the goods, as evidenced by the attached specimen(s) or facsimile(s) [6];
> on displays which are associated with the goods, as evidenced by the attached specimen(s) or facsimile(s) [6];
> in the case of services, in advertising of such services, as evidenced by the attached specimen(s) or facsimile(s) [6];
> other [7]."

[1] Reproduce the mark. [2] Insert "the undersigned applicant" and/or, if applicable, the name and address of the person or persons whose use of the mark inures to the benefit of the applicant in the State. [3] Insert name of State. [4] Insert "all" or indicate the particular goods

and/or services on or in connection with which the mark is used. [5] Insert the date of commencement of the continuing use of the mark, including, where different dates are applicable to different goods and/or services, the particular goods and/or services to which each such date relates. [6] The inclusion of specimens or facsimiles may be dispensed with where the declaration is made in respect of a State whose national law does not require that specimens or facsimiles be attached to routine declarations of actual use. [7] Recite sufficient facts in addition to, or in lieu of, checking one or more of the above boxes as to sales or advertising, or both, to show that the mark is in current use.

6.5 *Declarations Under Articles 21(2) and 22(2)*

(a) Any declaration under Article 21(2), where included in the international application, shall:

(i) specify the designated State or States in respect of which it is made,
(ii) contain the statement that the applicant owns a national registration or national registrations of the same mark in the said State or States,
(iii) indicate, in respect of each such national registration, its number.

(b) Any declaration under Article 22(2), where included in the international application, shall:

(i) specify the designated State or States in respect of which it is made,
(ii) contain the statement that the applicant owns a Madrid registration of the same mark in respect of the said State or States,
(iii) indicate the relevant registration number under the Madrid Agreement.

6.6 *Option Under Article 11(3)*

The indication referred to in Article 11(3) shall be effected by identifying the appropriate national register or the appropriate part of the national register (for example, "Supplemental Register" or "Part B Register").

6.7 *Trade or Business of the Applicant*

The applicant may indicate in the international application the trade or business in which he is engaged.

6.8 *Translation of the Mark*

If the mark consists of or contains one or more words which can be translated into the language of the international application, that application may contain such translation.

Rule 7
Languages

7.1 *Language of the International Application*

The international application shall be in the English or in the French language.

7.2 *Language of the Request for Recording of Later Designations*

The request for the recording of any later designation shall be in the same language as that in which the international application was filed.

7.3 *Language of Registrations, Recordings, Annotations and Communications*

(a) Registrations, recordings and annotations by the International Bureau shall be in the same language as that in which the international application was filed.

(b) Any notification or other communication addressed by the International Bureau to the applicant or the owner of the international registration and any request, demand, declaration or other communication addressed by the applicant or the owner of the international registration to the International Bureau shall be in the same language as that in which the international application was filed.

(c) Notification by the national Offices to the International Bureau, and letters of other written communications from the national Offices to the International Bureau, shall be in the English or in the French language, it being understood that copies of papers filed by a third party in the case of an opposition proceeding attached to any notice of possible refusal and any copy referred to in Rule 20.3(a)(iii) shall be in the language in which such papers or copy were filed with the national Office.

(d) Letters from the International Bureau to any national Office shall be in English or French according to the wish of the national Office; any matter in such letters quoted from the International Register of Marks shall be in the language in which such matter appears in that Register.

(e) Where the International Bureau is under the obligation to forward to the applicant or the owner of the international registration any of the communications referred to in paragraph (c), it shall forward them in the language in which it received them.

Rule 8
Form of the International Application

8.1 *Printed Forms*

(a) The international application shall be made on the printed form referred to in paragraph (b) or on a paper identical, for all practical purposes, with that form as to size, content and layout.

(b) The International Bureau shall furnish free of charge, on request, to prospective applicants, attorneys, patent or trademark agents, and to the national Offices, printed forms for international applications. Such forms shall be established in the English language, in the French language, and in both of those languages.

(c) The form shall be filled in preferably by typewriter and shall be easily legible.

8.2 *Copies; Signature*

(a) Subject to Rule 5.3(c)(ii), the international application, including the reproduction of the mark and any attachments, shall be filed in one copy.

(b) The international application shall be signed by the applicant.

8.3 *No Additional Matter*

(a) The international application shall not contain any matter, and shall not be accompanied by any document, other than those prescribed or permitted by the Treaty or these Regulations.

(b) If the international application contains matter other than that prescribed or permitted, the International Bureau shall delete it ex officio; and if the international application is accompanied by any document other than those prescribed or permitted, the International Bureau shall treat such document as if it had not been transmitted to it and shall return the said document to the applicant.

Rule 9
Fees Payable With the Filing of the International Application

9.1 *International Application Fee and State Designation Fees*

(a) The fees payable with the international application shall be:

(i) an "international application fee," and, where Rule 5.3(c)(i) applies, a color reproduction fee,
(ii) in respect of each designated State, the individual State designation fee or the standard State designation fee, as the case may be.

(b) The amounts of the international application fee, the color reproduction fee and the standard State designation fee are indicated in the Table of Fees.

(c) The amounts of the individual State designation

fees concerning the various Contracting States shall be published by the International Bureau each year in the month of August. The amounts so published shall be applicable as the individual State designation fees from Jan. 1 to Dec. 31 of the year following the year in which they are published.

Rule 10

Mandatory Contents of the Request for the Recording of Later Designations

10.1 *Indication that the Request is for the Recording of Later Designations*

The indication referred to in Article 6(2)(a)(i) shall be worded as follows: "The undersigned applicant/owner of the international registration identified herein requests the recording in the International Register of Marks of the following later designations made under the Trademark Registration Treaty"; or it shall consist of a statement to the same effect.

10.2 *Indications Concerning the Applicant or the Owner of the International Registration*

Rule 5.2 shall apply, *mutatis mutandis,* in the case of Article 6(2)(a)(ii).

10.3 *Identification of the International Application or International Registration*

(a) The international application shall be identified by a copy of the same and, where it was filed direct with the International Bureau, the date on which it was filed with or mailed to the International Bureau or, where it was filed through the intermediary of a national Office, the name of that Office and the date on which it was received by or mailed to the said Office.

(b) The international registration shall be identified by its international registration number and date.

10.4 *Identification of the Later Designated States*

Rule 5.5 shall apply, *mutatis mutandis,* in the case of Article 6(2)(a)(iv).

10.5 *Indication of the Choice Between National Mark and Regional Mark*

The choice referred to in Article 6(2)(a)(v) shall be indicated by the words "national mark desired" or "regional mark desired," respectively, or by other words to that effect, appearing next to the name of the designated State to which the choice applies.

10.6 *Collective Marks and Certification Marks*

The indication referred to in Article 6(2)(a)(vi) shall consist of the words "collective mark desired" or "certification mark desired," respectively, or other words to that effect, appearing next to the name of the designated State to which the indication applies.

10.7 *Requests Filed Through the Intermediary of a National Office*

(a) The indication referred to in Article 6(3)(b) shall be worded as follows: "The . . . [1] certifies that the present request was filed with it on . . . [2] ". [1] Indicate the name of the national Office. [2] Indicate the date.

(b) The national Office of any Contracting State whose national law provides that requests for the recording of later designations by residents of that State may be filed through the intermediary of the national Office of the said State shall, at least once a week, send to the International Bureau a note containing the following indications concerning each of the requests filed with it since the sending of the last such note:

(i) the name of the applicant or the owner of the international registration,

(ii) the international registration number and date to which the request refers or, where such number and date are not available, the reproduction of the mark, together with, where the international application was filed through the intermediary of the national Office, the date on which it was so received by such Office and the date on which it was mailed to the International Bureau or, where the international application was filed direct with the International Bureau, the date on which it was so filed or the date on which it was mailed to the International Bureau,

(iii) the date on which the request was filed with that Office,

(iv) the date on which the request was mailed to the International Bureau.

(c) The notes referred to in paragraph (b) shall be numbered consecutively. Where since the sending of the last note no requests have been filed with the national Office, the note shall state that fact.

(d) If the International Bureau does not receive any of the requests listed in any note within 15 days from the date on which it received such note, it shall inform the national Office accordingly.

Rule 11

Optional Contents of the Request for the Recording of Later Designations

11.1 *Claiming of Priority*

Rule 6.2 shall apply also to the declaration referred to in Article 6(2)(b).

11.2 *Declaration of Intent To Use*

(a) Any declaration made under Article 19(4)(a) shall consist of the following statement:

> "The undersigned applicant/owner of the international registration declares that he (it) intends to use the mark which is the subject of the international application/international registration to which this request relates himself (itself) and/or by and through persons whos use inures to his (its) benefit in commerce with and/or on the territory of . . . [1] on and/or in connection with the goods and/or services listed in this request."

[1] If the declaration relates to all the States designated in the request, insert "each of the States designated in this request"; otherwise, indicate those of the States designated in the request in respect of which the declaration is made.

(b) It shall depend on the national law of each designated State whether any declaration to the same effect as but worded differently than in paragraph (a) shall produce the effect provided for in Article 19(4)(a) in that State.

11.3 *Declaration of Actual Use*

In respect of any State designated in the request for recording of later designations, a statement, signed by the applicant or the owner of the international registration and whose form shall be the same as that appearing in Rule 6.4 or Rule 26.3, as the case may be, may be made and attached to the request.

11.4 *Declarations Under Articles 21(2) and 22(2)*

Rule 6.5 shall apply, *mutatis mutandis,* to any declaration under Articles 21(2) or 22(2), where such declaration is included in the request for the recording of later designations.

11.5 *List of Goods and/or Services*

The formal concept of limitation referred to in Article 6(2)(b), second sentence, is defined in Rule 24.2

11.6 *Option Under Article 11(3)*

The indication referred to in Article 11(3) shall be effected by identifying the appropriate national register or the appropriate part of the national register (for example, "Supplemental Register" or "Part B Register").

Rule 12

Form of the Request for the Recording of Later Designations

12.1 *Printed Forms*

(a) The request for the recording of later designations shall be made on the printed form referred to in paragraph (b) or on a paper identical, for all practical purposes, with that form as to size, content and layout.

(b) The international Bureau shall furnish free of charge, on request, to applicants, owners of international registrations, attorneys, patent or trademark agents, and to the national Offices, printed forms for requests for the recording of later designations. Such forms shall be established in the English language, in the French language, and in both of those languages.

(c) The form shall be filled in preferably by typewriter and shall be easily legible.

12.2 *Copies; Signature*

(a) The request for the recording of later designations and any attachments thereto shall be filed in one copy.

(b) The request shall be signed by the applicant or the owner of the international registration.

12.3 *No Additional Matter*

Rule 8.3 shall also apply to requests for the recording of later designations.

Rule 13

Fees Payable With the Request for the Recording of Later Designations

13.1 *International Later Designation Fee and State Designation Fees*

(a) The fees payable with the request for the recording of the later designation of any Contracting State shall be the following:

(i) an "international later designation fee," and, where Rule 5.3(c)(i) applies, a color reproduction fee,

(ii) in respect of each later designated State indicated in the request, the individual State designation fee or the standard State designation fee, as the case may be.

(b) The amounts of the international later designation fee, the standard State designation fee and the color reproduction fee are indicated in the Table of Fees.

Rule 14

Defects in the International Application

14.1 *Minimum Amount Under Article 7*

The minimum amount referred to in Article 7(2)(a)(ix) and (3)(a)(i) shall be an amount equivalent to the amount of the international application fee referred to in Rule 9.1(a(i).

14.2 *Notification, and Reimbursement of Certain Fees, Under Article 7(5)*

(a) Where the International Bureau declines the international application, it shall notify the applicant accordingly and shall state the grounds for declining. It shall reimburse to the applicant all fees received from him except an amount equivalent to the international application fee referred to in Rule 9.1(a)(i).

(b) Where the International Bureau declines to record a State as a designated State either on the ground referred to in Article 7(3)(b) or on the ground that the said State is not a Contracting State, it shall reimburse to the applicant any fee received from him in respect of the attempted designation of that State.

14.3 *Notification of the National Office*

Where the international application is treated as provided for in Article 7(6), the International Bureau shall inform accordingly the national Office through the intermediary of which the application was filed.

Rule 15

Defects in the Request for the Recording of later Designations

15.1 *Application of Rule 14*

Rule 14 shall apply, *mutatis mutandis*, in respect of Article 8, provided that the amount referred to in Rules 14.1 and 14.2(a) shall be an amount equivalent to the amount of the international later designation fee referred to in Rule 13.1(a)(i).

Rule 16

Procedure Where Avoiding the Effects of Declining Is Sought

16.1 *Recording and Publication Under Article 9(3)*

(a) The fact of having received a copy of a petition under Article 9(1)(i) shall, where the petition relates to a mark which is already registered in the International Register of Marks, be recorded by recording the subject of the petition, the name of the national Office to which it appears to be addressed, and the date on which the said copy was received.

(b) The publication under Article 9(3) shall contain the international registration number of the mark, the name of the State to whose national Office the petition appears to have been addressed, and the date on which the copy of the petition was received by the International Bureau.

16.2 *Information Available to National Offices*

On the request of the applicant or the owner of the international registration, or of the interested national Office, the International Bureau shall send to that Office a copy of the file of the declined international application or declined request for the recording of later designations, together with a memorandum setting out the grounds for and the various steps leading to the declining of the said application or request.

16.3 *Information Furnished by the National Office*

Any request by a national Office referred to in Article 9(2)(i) shall indicate the grounds on which it is based.

Rule 17

Certificates

17.1 *Certificates of International Registration and Certificates of Recording of Later Designations*

(a) The certificates referred to in Articles 7(1) and 8(1) shall be issued in the name of the International Bureau and shall be signed by the Director General or an officer of the International Bureau authorized to do so by the Director General.

(b) Any such certificate shall consist of a facsimile of the publication of the international registration or of the publication of the recording of the later designations, as the case may be, and a statement to the effect that the said registration or recording reproduced in the certificate has been effected in the International Register of Marks.

(c) The certificate shall be promptly sent to the owner of the international registration.

Rule 18

Publication of International Registrations and Recordings of later Designations

18.1 *Contents of Publication of International Registrations*

(a) The publication of any international registration shall contain:

(i) the name and address of the owner of the international registration, together with any indication of his trade or business and, if he bases his right to file international applications on his residence in, or his nationality of, a State other than that in which he has his address, the name of the State of his residence or nationality, as the case may be.
(ii) the reproduction of the mark, together with any indication under Rule 5.3(d) or (e) and any transliteration and translation; where color is claimed, the reproduction shall be in color if Rule 5.3(c)(i) applies, and it shall be in black and white and shall be accompanied by a description of the colors in words and signs if Rule 5.3(c)(ii) applies,
(iii) the list of goods and/or services,
(iv) the names of the designated States and, where applicable, after the name of each such State, an indication concerning the choice referred to in Rule 5.6 and the indication referred to in Rule 5.7,
(v) the international registration date,
(vi) the international registration number,
(vii) where the priority of one or more earlier applications is claimed, the date of filing and the number (if available) of such applications, the name of the country or countries in which or for which they were filed, and, where applicable, an indication that the application was filed under this Treaty or, where it was for a regional mark, an indication of the authority with which it was filed.
(vii) any indication under Article 11(3),
(ix) any declaration under Articles 21(2) and 22(2),
(x) the particulars concerning the representative, as provided in Rule 39.2(a).

(b) Where, in respect of any designated State, the international registration is effected pursuant to Article 9(2) (i), this fact shall be indicated in the publication.

(c) The Administrative Instructions shall provide for the composition and allocation of international registration numbers.

18.2 *Contents of Publication of Recordings of later Designations*

(a) The publication of any recording of a later designation shall contain:

(i) *mutatis mutandis,* the same elements as those referred to in Rule 18.1(a),
(ii) the international later designation number,
(iii) the date of the recording of the later designation.

(b) Where the recording of any later designation is effected pursuant to Article 9(2)(i), this fact shall be indicated in the publication.

The Administrative Instructions shall provide for the composition and allocation of international later designation numbers.

(d) Where the recording of any later designation was effected sufficiently prior to the date of publication of the international registration to be practical to do so, the publication of the recording of the later designation shall be consolidated with the publication of the international registration.

Rule 19

Notification of International Registrations and Recordings of later Designations

19.1 *Form of Notification*

The notification referred to in Article 10(2) shall be effected separately for each national Office and shall consist of:

(i) a list of the international registration numbers and the international later designation numbers of the international registrations and recordings of later designations in which the State of the said Office has been designated,
(ii) reprints made of the publication by the International Bureau of each international registration and of each recording of later designations referred to in the said list,
(iii) a copy of the international application or the request for the recording of later designations if it contains a declaration made under Article 19(4)(a).
(iv) a copy of any declaration made under Rules 6.4 or 11.3,
(v) where Rule 5.3(c)(ii) applies, the reproduction in color of the mark in the number of copies specified in the Administrative Instructions, provided that such Instructions shall enable each Office to require at least six copies.

19.2 *Time of Notification*

The notification shall be effected on the same day as that on which the issue of the Gazette is published that contains the matter from which the reprints referred to in Rule 19.1(ii) are made.

Rule 20

Refusals; Notices of Possible Refusal

20.1 *Notifying the International Bureau; Grounds*

(a) Any notification under Article 12(2)(a) shall be sent in one copy, preferably on a form furnished free of charge by the International Bureau to the national Office of each contracting State. The notification shall, in any case, contain:

(i) the international registration number of the international registration, or the international later designation number of the later designation, as the case may be, to which the refusal or the notice of possible refusal relates,
(ii) the name of the owner of the international registration,
(iii) an indication of the mark in the cases and the manner provided for in paragraph (b),
(iv) an indication as to whether the notification is that of a refusal or of a notice of possible refusal,
(v) where it relates to some only of the goods and/or services listed, identification of those to which it relates,
(vi) the grounds referred to in Article 12(2)(a)(ii) and (iii), together with a reproduction of any mark cited in the notification and not reproduced therein and a copy of the list of goods and/or services (in the original language) pertaining to such mark, and when the notice of possible refusal specifies the grounds by reference to the opposition of a third party, a copy of any document filed by the opposing party in which the said grounds are specified, together with a reproduction of any mark cited in the said document and not reproduced therein and a copy of the list of goods and/or services pertaining to such mark; where the grounds specified by the national Office in the notice of possible refusal do not include the grounds or some of the grounds invoked in the document filed by the opposing party and transmitted together with the said notice by the national Office, all the grounds contained in the said document shall be considered as having been specified by the national Office,
(vii) an indication as to whether any remedy is available, and if so with which authority it has to be sought and within what time limit.

(b) The cases and the manner referred to in paragraph (a)(iii) and in Rules 2.1.(a)(ii) and 28.1(c)(ii) shall be as follows:

(i) where the mark consists of letters of the Latin alphabet, Arabic or Roman numerals, and punctuation signs usual in connection with the Latin alphabet, without any special graphic features and without also containing figurative elements, the indication shall consist of the letters, numerals and signs,
(ii) where item (i), above, does not apply, the indication shall consist of a reproduction of the mark.

(c) The form referred to in paragraph (a) shall be pre-

pared separately for each Contracting State, in collaboration with its national Office. It shall list the more common of the grounds for refusal with a reference to the pertinent provisions of the national law so that, wherever possible, such grounds may be specified by marking the applicable items of the list. The form shall contain a space reserved for specifying any other grounds and for other possible indications.

20.2 *Notifying the Owner of the International Registration; Publication*

(a) The notification under Article 31, of the recording effected under Article 12(4)(a) shall be sent to the owner of the international registration promptly after the receipt of the notification referred to in Article 12(2)(a); it shall indicate the date on which the notification made under Article 12(2)(a) was received by the International Bureau and shall include a copy thereof.

(b) The publication of the recording effected under Article 12(4)(a) shall be effected promptly and shall contain:

(i) the international registration number of the international registration, or the international later designation number of the later designation, as the case may be, to which the refusal or the notice of possible refusal relates, and the name of the owner of the international registration,
(ii) the name of the State whose national Office transmitted the notification,
(iii) a statement to the effect that a notification uner Article 12(2)(a) was received.

20.3 *Notification and Recording of Final Decisions of Refusal; Cancellation of the designation, and Publication of the Cancellation*

(a) The notification by the national Office under Article (12)(4)(b) shall be effected promptly after the date on which the date on which the decision of refusal becomes final and shall contain:

(i) an indication that it relates to a final decision of refusal,
(ii) the indications referred to in Rule 20.1(a)(i),
(iii) where the decision is that of a court; a copy of the final decision, or, where the decision is not that of a court, the grounds given in the final decision, preferably in the same manner as that indicated in Rule 20.1(c),
(iv) where the notification relates to some only of the goods and/or services listed, identification of those to which it relates,
(v) the name of the authority which pronounced the decision, the number, if any, and the date of such decision,
(vi) the date on which the decision became final.

(b) The notification by the International Bureau under Article 12(4)(b) shall be effected as soon as possible and shall include a copy of the notification referred to in paragraph (a), as well as the name of the State whose authorities have pronounced the final decision and an indication of the date of the receipt of such notification by the International Bureau.

(c) The details of the recording referred to in Article 12(4)(b) shall be provided in the Administrative Instructions.

(d) The publication referred to in Article 12(4)(b) shall be effected promptly and shall consist of the indications contained in the notification referred to in paragraph (a)(i) and (iv) to (vi), above, as well as the name of the State whose authorities have pronounced the final decision and the name of the owner of the international registration.

20.4 *Notification and Publication Where Final Decision Results in Acceptance of the Effect Provided for in Article 11(2)*

(a) The notification under Article 12(4)(c) shall be effected promptly after the final disposal of the case and shall consist of a statement to the effect that the notice of possible refusal or the refusal is withdrawn, the indications referred to in Rule 20.1(a)(i), the number, if any, and the date of the decision, and the date on which the decision became final.

(b) The publication referred to in Article 12(4)(c) shall be effected promptly and shall consist of the elements referred to in paragraph (a), as well as the name of the State whose authorities have pronounced the final decision and the name of the owner of the international registration.

20.5 *Belated Notifications*

If any notification referred to in Article 12(2)(a) is received by the International Bureau after the expiration of the time limit fixed in that provision, the International Bureau shall inform accordingly the national Office which effected the notification, treat such notification as if it had not been effected, inform the owner of the international registration that the notification it received is belated, and send to the owner a copy thereof.

Rule 21

Final Decisions of Cancellation

21.1 *Notification and Recording of Final Decisions of Cancellation; Cancellation of the Designation, and Publication of the Cancellation*

(a) The notification referred to in Article 13(3) shall be effected promptly after date on which the decision of cancellation becomes final and shall contain:

(i) the international registration number of the international registration, or the international later designation number of the later designation, as the case may be, to which the final decision of cancellation relates,
(ii) an indication of the mark in the cases and the manner provided for in Rule 20.1(b),
(iii) where the final decision relates to some only of the goods and/or services listed, identification of those to which it relates,
(iv) the name of the authority which pronounced the final decision,
(v) the number, if any, and the date of such decision,
(vi) the date on which the decision became final.

(b) The details of the recording referred to in Article 13(3) shall be provided in the Administrative Instructions.

(c) The publication referred to in Article 13(3) shall be effected promptly and shall consist of the indications contained in the notification referred to in paragraph (a), as well as the name of the State whose authorities have pronounced the final decision of cancellation and the name of the owner of the international registration.

Rule 22

Changes in Ownership

22.1 *Request for Recording of Change in Ownership*

(a) The indication referred to in Article 14(1)(b)(i) shall preferably be worded as follows: "The undersigned requests that the following change in ownership concerning the international registration identifed herein be recorded."

(b) Rule 5.2 shall apply, *mutatis mutandis,* to the indications concerning the new owner referred to in Article 14(1)(b)(iii).

(c) The designated States referred to in Article 1491)(b)(iv) shall be identified by their names in a manner sufficiently clear for the purpose, provided that where the request relates to all the States designated in the existing international registration, they may be identified by a statement to that effect.

(d) The goods and/or sevices referred to in Article 14(1)(b)(iv) shall be identified as follows:

(i) where the request relates to all of the designated States and all of the goods and/or services listed in re-

spect of each of those States, by a statement to that effect,

(ii) where the request relates to all of the designated States and the list of goods and/or services, while being the same for each, is more limited than in the international registration, by a new list and by a statement to the effect that it applies to all of the designated States,

(iii) in all other cases, in respect of those States for which the list of goods and/or services is the same as in the existing international registration, by a statement to that effect, and, in respect of those States for which the list of goods and/or services is more limited than the list of goods and/or services in the existing international registration, by a new list.

(e) The attestation referred to in Article 14(1)(c) shall be worded as follows:

"According to evidence produced before this Office, . . . [1] appears to be the successor in title of . . . [2] to the extent described in the present request, and the conditions referred to in Article 14(1)(c) of the Trademark Registration Treaty appear to be fulfilled. This attestation is given for the sole purpose of allowing the change of ownership to be recorded in the International Register of Marks."

[1] Insert the name of the new owner. [2] Insert the name of the earlier owner.

(f) The attestation shall be dated and shall bear the stamp or seal of the national Office and the signature of an official thereof.

(g) the amount of the fee referred to in Article 14 (1)(d) is indicated in the Table of Fees.

(h) The request may contain an indication of the trade or business in which the new owner is engaged.

22.2 *Publication Where the Change in Ownership is Total*

(a) Where the change in ownership concerns all the designated States and all the goods and/or services, the publication referred to in Article 14(1)(d) shall contain:

(i) an indication that the change in ownership concerns all the designated States and all the goods and/or services,

(ii) the name and address of the new owner together with the indication, if any was given by him, of his trade or business and, if he bases his right to own international registrations on his residence in, or his nationality of, a State other than that in which he has his address, the name of the State of his residence or nationality, as the case may be,

(iii) the name of the earlier owner,

(iv) the date on which the International Bureau received the request,

(v) a reference to all the prior publications concerning the international registration except those which have been superseded by later publications in respect of that registration.

(b) The publication shall be effected under the number of the international registration, and, where applicable, the numbers of later designations to which it refers, followed by such further indications as the Administrative Instructions shll provide.

22.3 *Publication Where the Change in Ownership is Partial*

(a) Where the change in ownership concerns fewer than all of the designated States and/or some only of the goods and/or services, the publication referred to in Article 14(1)(d) shall contain two parts, one concerning the new owner, the other the earlier owner.

(b) The part concerning the new owner shall contain:

(i) an indication that the publication is effected pursuant to a request for the recording of a change in ownership,

(ii) the date on which the International Bureau recieved the request,

(iii) the number under which the part concerning the earlier owner is published,

(iv) the name and address of the new owner together with the indication, if any was given by him, of his trade or business and, if he bases his right to own international registrations on his residence in, or his nationality of, a State other than that in which he has his address, the name of the State of his residence or nationality, as the case may be,

(v) all the indications which, prior to the date referred to in item (ii), were published in respect to the international registration and which have not been superseded by later publications in respect of that registration, except those indications which solely concern designated States and goods and/or services in respect to which ownership is retained by the earlier owner.

(c) The part concerning the earlier owner shall contain:

(i) an indication that the publication concerns an existing international registration and contains those elements of that registration which, after the recording of the change in ownership concerning that registration, continue to concern the earlier owner,

(ii) the number under which the part concerning the new owner in published,

(iii) the date on which the International Bureau received the request,

(iv) all the indications which, prior to the date referred to in item (iii), were published in respect of the international registration and have not been superseded by later publications in respect of that registration, except those indications which, because of the change in ownership, no longer concern the earlier owner.

(d) Each part shall have an number and possibly also an appropriately worded heading. The Administrative Instructions shall provide the details of such numbers and headings.

22.4 *Notification of Recording of Changes*

(a) The notifications referred to in Article 14(1)(d) shall be effected by sending reprints of the publication referred to in Rules 22.2 and 22.3.

(b) The transmittal to designated Offices of the reprints referred to in paragraph (a) shall be accompanied by a list of the numbers referred to in Rules 22.2(b) and 22.3(d) relating to recordings concerning the designated State to which the list is addressed. Rule 19.2 shall apply, *mutatis mutandis.*

22.5 *Notification of Declining of the Recording*

The notification referred to in Article 14(2)(a) shall be effected by letter. The letter shall state the grounds for declining.

22.6 *Denial*

(a) The notification by the national Office referred to in Article 14(4)(c) shall:

(i) refer to the fact of the denial,

(ii) identify the authority that pronounced the denial and the date on which it was pronounced,

(iii) indicate the relevant number or numbers referred to in Rule 22.2(b) and 22.3(d),

(iv) contain a brief indication of the grounds for the denial.

(b) The recording and the publication referred to in Article 14(4)(c) shall contain:

(i) the elements referred to in paragraph (a),

(ii) the date on which the International Bureau received the notification referred to in paragraph (a),

(iii) a reference to the publication of the recording effected under Article 14(1)(d).

(c) The notification by the International Bureau referred to in Article 14(4)(c) shall be sent to the earlier and the new owners and to the national Office which notified the denial.

Rule 23

Changes in the Name of the Owner of the International Registration

23.1 *Request for Recording of Change in the Name*

(a) The indication and declaration referred to in Article 15(2)(b)(i) and (ii) shall preferably be worded as follows: "The undersigned requests that the following change in the name of the owner of the international registration(s) identified herein be recorded. He declares that this change in his name does not amount to change in ownership."

(b) Rules 5.2(a) shall apply, *mutatis mutandis*, to the indication of both the former and the new names of the owner of the international registration.

(c) The amount of the fee referred to in Article 15(2)(d) is indicated in the Table of Fees.

23.2 *Publication*

(a) The publication referred to in Article 15(3) shall contain:

(i) an indication to the effect that it concerns a change in the name of the owner of the international registration,
(ii) the former name of the owner,
(iii) the new name of the owner,
(iv) the international registration number of the international registration in respect of which the recording has been effected,
(v) the date on which the International Bureau received the request,
(vi) a reference to all the prior publications concerning the international registration except those which have been superseded by later publication in respect of the international registration conerned.

(b) The publication shall be effected under the number of the international registration, and, where applicable, the numbers of later designations to which it refers, followed by such further indications as the Administrative Instructions shall provide.

23.3 *Notification of Recording*

(a) The notifications referred to in Article 15(3) shall be effected by sending reprints of the publication referred to in Rule 23.2

(b) The transmittal to designated Offices of the reprints referred to in paragraph (a) shall be accompanied by a list of the numbers referred to in Rule 23.2(b) relating to recordings concerning the designated State to whose national Office the list is addressed. Rule 19.2 shall apply, *mutatis mutandis*.

23.4 *Notification of Declining the Recording*

The notification referred to in Article 15(4) shall be effected by letter. The letter shall state the grounds for declining.

23.5 *Denial*

(a) The notification by the national Office referred to in Article 15(6)(b) shall:

(i) refer to the fact of the denial,
(ii) identify the authority which pronounced the denial and the date on which it was pronounced,
(iii) indicate the relevant number or numbers referred to in Rule 23.2(b),
(iv) contain a brief indication of the grounds for the denial.

(b) The recording and the publication referred to in Article 15(6)(b) shall contain:

(i) the elements referred to in paragraph (a),
(ii) the date on which the International Bureau received the notification referred to in paragraph (a),
(iii) a reference to the publication of the recording effected under Article 15(3).

(c) The notification by the International Bureau referred to in Article 15(6)(b) shall be sent to the owner of the international registration and to the national Office which notified the denial.

Rule 24

Recording of Limitations of the List of Goods and/or Services

24.1 *Request for Recording of Limitation of the List*

(a) The request for recording referred to in Article 16(1) shall indicate its purpose and contain:

(i) the name of the owner of the international registration,
(ii) the international registration number,
(iii) the desired limitation of the list of goods and/or services,

(iv) where the request relates to fewer than all the designated States, identification of those States to which it relates,
(v) where the request relates to one only of the designated States and, while not conforming with the formal concept of limitation ad defined in Rule 24.2(a) and (b), it conforms with a decision of the national Office or other competent authority of such State concerning the international registration, a copy of such decision and, if the decision is in a language other than English or French, a translation of such decision.

(b) The request shall be signed by the owner of the international registration.

(c) The amount of the fee referred to in Article 16(2) is indicated in the Table of Fees.

(d) Where any term which is the subject of the request appears under more than one class of the International Classification and the request does not identify the class or classes to which it relates, such request shall be treated as if it related to the term under each of the classes under which it appears.

24.2 *Formal Concept of Limitation*

(a) Subject to paragraph (c), any request under Article 16(1) shall be regarded as conforming with the formal concept of limitation if it is presented in any of the following forms:

(i) it asks for the deletion of one or more terms in the list of goods and/or services,
(ii) it asks for the insertion of one or more words, linked to the existing term by words (such as "except") which, from the point of view of syntax, make it clear that the inserted word or words are meant to be excluded from the existing term (for example, *milk products* (existing term) *except* (linking word) *condensed milk* (inserted words)),
(iii) it asks for the insertion of one or more words linked to the existing term by words (such as "provided that") which, from the point of view of syntax, make it clear that the inserted words are covered by the existing term (for example, *pineapples* (inserted word) *provided that they are* (linking words) *canned fruits* (existing term)).

(b) Unless the limitation is presented in one of the forms described in paragraph (a), it shall not, subject to paragraph (c), be regarded as conforming with the formal concept of limitation, however clear it may be that, in the ordinary sense of the word, there is a limitation (for example, replacing the term "milk products" by "condensed milk").

(c) For the purposes of Rule 24.1(a)(v), any change in the list of goods and/or services decided upon by the national Office or other competent authority concerned shall be deemed to conform with the formal concept of limitation.

24.3 *Recording, Publication, and Notification, of Limitation of the List*

(a) If the request complies with the presecribed requirements, the International Bureau shall record the in-

dications referred to in Rule 24.1(a)(i) to (iv) and the date on which the request was received.

(b) Where the request is based on a decision referred to in Rule 24.1(a)(v), this fact, together with the following particulars, shall also be recorded:

(i) the name of the authority which pronounced the decision,

(ii) the number, if any, and the date of such decision.

(c) The publication and the notification referred to in Article 16(2) shall contain the indications referred to in Rule 24.1(a)(i) to (iv), the indications referred to in paragaph (b) and the date of the recording.

24.4 *Declining the Recording of Limitation of the List*

If the request does not comply with the prescribed requirements, the International Bureau shall decline the recording of the limitation and shall notify the owner of the international registration accordingly. The notification shall include the grounds for declining.

24.5 *Invitation to Record Limitation of the List; Recording, Publication and Notification*

(a) The invitation by the national Office referred to in Article 16(5)(a) or (b) shall:

(i) indicate the relevant international registration number and date,

(ii) indicate the name of the owner of the international registration,

(iii) refer to the declining of the request of the owner or to the recording of the limitation by the International Bureau, as the case may be,

(iv) indicate the finding of the national Office or other competent authority together with a brief indication of its grounds,

(v) where the finding is contained in a decision, indentify the authority which pronounced the decision and the date on which it was pronounced,

(vi) where, under Article 16(5)(b), the limitation is found to be a limitation only in part, specify the extent to which it is found to be a limitation.

(b) The recording and the publication referred to in Article 16(5)(c) shall contain:

(i) the elements referred to in paragraph (a),

(ii) the date on which the International Bureau received the invitation referred to in paragraph (a),

(iii) a reference to the publication of the recording, if any, effected under Article 16(1).

(c) The notifications by the International Bureau referred to in Article 16(5)(c) shall be sent to the national Office which sent the invitation.

Rule 25
Renewal

25.1 *Reminder by the International Bureau*

The International Bureau shall send a letter to the owner of the international registration before the expiration of the term, initial or renewal (as the case may be), which is in effect, reminding him that such term is about to expire. Further details concerning the contents of the reminder shall be provided in the Administrative instructions. The reminder shall be set at least 6 months before the expiration date. Failure to send or receive the reminder, or the fact of sending or receiving it outside the said period, or any error in the remainder, shall not affect the expiration date.

25.2 *Demand for Renewal*

(a) Any demand for renewal may exclude any of the designated States.

(b) Any demand for renewal may exclude in respect of any of the designated States all the goods and/or services appearing in the international registration under a given class or under given classes of the International Classification.

(c) The demand for renewal referred to in Article 17(3)(a) shall preferably be made on a printed from furnished free of charge by the International Bureau together with the remainder referred to in Rule 25.1. The demand shall, in any case, indicate its purpose and contain:

(i) the name and address of the owner of the international registration,

(ii) the international registration number,

(iii) where the demand contains any exclusion under paragraphs (a) or (b), the identification of the state or State and/or the class or classes referred to in paragraph (b).

(d) Where the demand contains any exclusion under paragraphs (a) or (b), it shall be signed by the owner of the international registration.

(e) The demand for renewal shall not be combined with any other request; in particular, it shall not contain a request for recording a later designation, a request for recording a change in ownership, or, subject to paragraph (b), a request for recording a limitation in the list of goods and/or services.

(f) Rule 8.3 shall also apply to demands for renewal, provided that any declaration under Article 19(3)(d) may be filed at the same time as the demand for renewal.

25.3 *International Renewal Fee and State Renewal Fees*

(a) The fees payable under Article 17(3)(a) shall be the following:

(i) an "international renewal fee," and, where Rule 5.3(c)(i) applies, a color reproduction fee, as well as, where applicable, the "renewal surcharge" referred to in Article 17(3)(a),

(ii) in respect to each designated State to which the demand relates the individual State renewal fee or the standard State renewal fee, as the case may be.

(b) The amounts of the international renewal fee, the color reproduction fee, the renewal surcharge and the standard State renewal fee are indicated in the Table of Fees.

(c) The amounts of the individual State renewal fees concerning the various Contracting States shall be published by the International Bureau each year in the month of Aug. The amounts so published shall be applicable as the individual State renewal fees from Jan. 1 to Dec. 31 of the year following the year in which they are published.

25.4 *Imperfect Demands*

(a) Where, within the time limits fixed in Article 17(3)(a), the International Bureau receives:

(i) a demand which does not conform with the requirements or Rule 25.2, or

(ii) a demand but no payment or insufficient payment to cover the renewal fees and any surcharge that is due, or

(iii) money which appears to be intended to cover fees connected with renewal but not demand,

it shall, whenever practicable, promptly invite the owner of the international registration to present a correct demand, to pay or complete the renewal fees and any surcharge that is due, or to present a demand, as the case may be. The invitation shall indicate the applicable time limits.

(b) Failure to send or receive the invitation referred to in paragraph (a), or any delay in dispatching or receiving such invitation, or any error in the invitation, shall not prolong the time limits fixed in Article 17(3)(a).

25.5 *Recording, Publication, and Notification*

(a) Where the demand is presented and the fees are paid as prescribed, the International Bureau shall record the renewal and shall publish the elements, as specified

in paragraph (b), of the international registration as it stands on the first day of the term of renewal, together with an indication both of the fact that the publication is that of a renewal and of the date on which the renewal shall expire.

(b) The elements referred to in paragraph (a) shall be the following:

(i) the name and address of the owner of the international registration, together with the indication, if any was given by him, of his trade or business and, if he bases his right to own international registrations on his residence in, or his nationality of, a State other than that in which he has his address, the name of the State of his residence or nationality, as the case may be,

(ii) the reproduction of the mark, together with any indication under Rule 5.3(d) or (e) and any transliteration and translation; where color is claimed, the reproduction shall be in color if Rule 5.3(c)(i) applies, and it shall be in black and white and shall be accompanied by a description of the colors in words and signs if Rule 5.3(c)(ii) applies,

(iii) the list of goods and/or services, provided that, where the list of goods and/or services differs in respect of different designated States, the publication shall contain appropriate indications in order to show which goods and/or services relate to which designated State,

(iv) the names of the designated States and, where applicable, after the name of each such State, and indication concerning the choice referred to in Rule 5.6 and the indication referred to in Rule 5.7,

(v) where, in respect of any designated State, a refusal or notice of possible refusal was notified and no final decision resulting in the cancellation of the designation or in the acceptance of the effect referred to in Article 11(2) has been notified, an indication that a refusal or notice of possible refusal was notified, together with the date of the receipt by the International Bureau of the notification of the refusal or notice of possible refusal,

(vi) the international registration number,

(vii) any international later designation number,

(viii) where the priority of one or more earlier applications was claimed, a statement that such claim has been made,

(ix) a reference to any indication under Article 11(3),

(x) a reference to any declaration under Articles 21(2) and 22(2),

(xi) particulars concerning the representative, as provided in Rule 39.2(a).

(c) Any indication which, at some time prior to the first day of the term of renewal, has been part of the international registration but which, before that day, has been cancelled or superseded shall not be included in the publication referred to in paragraph (a).

(d) The notification under Article 31 shall be effected by sending to the owner of the international registration a reprint of the publication of the renewal referred to in paragraph (a).

(e) The International Bureau shall notify each designated Office of the renewal by sending it:

(i) a reprint of the publication referred to in paragraph (a), and

(ii) where Rule 5.3(c)(ii) applies, the reproduction of the mark in the number of copies specified in the Administrative Instructions, provided that such Instructions shall enable each national Office to require at least six copies.

25.6 *Declining the Demand*

(a) Where the limits fixed in Article 17(3)(a) are not respected or where the demand does not conform with the requirements of Rule 25.2 or the fees (including, where applicable, any surcharge) are not paid as prescribed, the International Bureau shall decline the demand and shall notify the owner of the international registration by letter. The letter shall state the grounds for declining.

(b) The International Bureau shall not decline any demand before the expiration of 6 months after the starting date of the term of renewal.

25.7 *Reimbursement of Certain Fees*

Where, under Rule 25.6(a), the International Bureau declines the demand, it shall reimburse to the owner of the international registration all fees received from him except an amount equivalent to the international renewal fee referred to in Rule 25.3(a)(i).

25.8 *Recording of Lack of Demand*

Where, by the expiration of 6 months after the starting date of the term of renewal, no demand for renewal is presented to the International Bureau in respect of any or all of the designated States, such fact shall be recorded by the International Bureau.

25.9 *Publication of Lists of International Registrations Not Renewed*

The International Bureau shall publish, at intervals specified in the Administrative Instructions, a list of the international registration numbers of those international registrations which, having become due for renewal, have been renewed in respect of none of the designated States.

Rule 26

Declarations of Actual Use

26.1 *Information on Requirement Concerning Routine Declarations of Actual Use*

The national Office of any Contracting State whose national law requires the filing of rountine declarations referred to in the first sentence of Article 19(3)(d) shall in form the International Bureau of such requirement and of any changes therein. Such information shall, in particular, indicate the time limits within which such declarations must be filed according to the national law and state whether the attachment of specimens or facsimiles to routine declarations of actual use is required by the national law. Any information received shall be published promptly upon receipt. Furthermore, the International Bureau shall republish in Aug. of each year all the information received and still applicable at the time of the republication in respect of all the States concerned.

26.2 *National Forms*

The national Office of any Contracting State referred to in Rule 26.1 shall supply free of charge to the International Bureau in reasonable quantities declaration forms, in the form prescribed by the national law of that State, for the purposes of making declarations referred to in Article 19(3)(d). The International Bureau shall furnish such forms free of charge to interested persons.

26.3 *International Form*

(a) Where the declaration referred to in Article 19(3)(d) is not made on a national form according to Rule 26.2, it shall be made on a form ("international form") consisting of the following statement and shall be signed by the owner of the international registration:

> "The undersigned owner of the international registration declares that he (it) is the owner of the international registration which was effected under No. . . . , as shown by recordings in the International Register of Marks, in respect of . . . [1] on . . . [2] ; that the mark which is the subject of the international registration herein identified is now in use by and through . . . [3] in commerce with and/or on the territory of the said State on or in connection with the following goods and/or services listed in respect of such State: . . . [4] ; that such use commenced on . . . [5] ; and that the mode or manner in which the mark is used is:

on labels or tags affixed to and/or containers for the goods, as evidenced by the attached specimen(s) or facsimile(s) [6] ;
on displays which are associated with the goods, as evidenced by the attached specimen(s) or facsimile(s) [6] ;
in the case of services in advertising of such services, as evidenced by the attached specimen(s) or facsimile(s) [6] ;
other [7] ."

[1] Insert name of State. [2] Insert international registration date or, if applicable, recording date of the later designation of such State. [3] Insert "the undersigned owner" and/or, if applicable, the name and address of the person or persons whose use of the mark inures to the benefit of the owner in the State. [4] Insert "all" or indicate the particular goods and/or services on or in connection with which the mark is used. [5] Insert the date of commencement of the continuing use of the mark, including, where different dates are applicable to different goods and/or services, the particular goods and/or services to which each such date relates. [6] The inclusion of specimens or facsimiles may be dispensed with where the declaration is made in respect of a State whose national law does not require that specimens or fascimiles be attached to routine declarations of actual use. [7] Recite sufficient facts in addition to, or in lieu of, checking one or more of the above boxes as to sales or advertising, or both, to show that the mark is in current use.

(b) The International Bureau shall furnish such forms free of charge to interested persons.

(c) The inclusion of specimens or facsimiles may be dispensed with where the declaration is made in respect of a State whose national law does not require that specimens or facsimiles be attached to routine declarations of actual use.

(d) The specimens referred to in paragraph (a) shall, in the case of a mark for goods, be duplicates of the actually used labels, tags, or containers, or the displays associated therewith, or portions thereof, when made of suitable material and capable of being arranged flat and of a size not larger than the declaration. When, owing to the mode of applying or affixing the mark to the goods or to the manner of its use on the goods, such specimens cannot be furnished, suitable photographs or other acceptable reproductions, not larger than the declaration, which clearly and legibly show the mark and all matter used in connection therewith, shall be furnished. In the case of marks for services, specimens or facsimiles, as specified above, of the mark as used in the sale or advertising of the services shall be furnished unless impossible because of the nature of the mark or the manner in which it is used, in which event some other acceptable reproductions shall be furnished.

(e) It shall depend on the national law of each Contracting State whether any declaration to the same effect as but worded differently than in paragraph (a) shall produce the same effect.

Rule 27

Declarations Concerning Earlier National or Madrid Registrations

27.1 *Separately Filed Declarations*

(a) Any separately filed declaration under Article 21(2) shall:

(i) specify the designated State or States in respect of which it is made,
(ii) contain the statement that the owner of the international registration owned a national registration or national registrations in the said State or States on the international registration date or the international later designation date, as the case may be,
(iii) indicate, in respect of each such national registration, its number,
(iv) indicate the international registration number of the international registration to which it relates.

(b) Any separately filed declaration under Article 22(2) shall:

(i) specify the designated State or States in respect of which it is made,
(ii) contain the statement that the owner of the international registration owned a registration under the Madrid Agreement in respect of the said State or States on the international registration date or the international later designation date, as the case may be,
(iii) indicate the number of the relevant Madrid registration,
(iv) indicate the international registration number of the international registration to which it relates.

27.2 *Certification of National Registrations*

The certification of the copy of any national registration referred to in Article 21(2) shall be in the English or French language, shall be signed by a person authorized by the national Office to effect certifications and shall indicate the date to which the certification refers. That date shall be the international registration date or the international later designation date, as the case may be, or, where the certification is made before international registration or recording of the later designation is effected, the date on which the certification is effected. In the latter case, the national Office effecting the certification shall, on the request of the International Bureau presented once the said registration or recording is effected by it, indicate to that Bureau any change which might have occurred in respect of the national registration between the date to which the certification referred and the international registration date or the recording date of the later designation, as the case may be.

27.3 *Defects*

(a) The International Bureau shall promptly notify the applicant or the owner of the international registration of any defect in the declaration made under Article 21(2) or Article 22(2), including the absence of the certified copy referred to in Article 21(2) and any defect in the certification thereof as provided in Rule 27.2.

(b) As long as any defect referred to in paragraph (a) is not corrected, the International Bureau shall treat the declaration as if it had not been made.

27.4 *Publication; Notification*

(a) Unless effected by virtue of Rule 18.1(a)(ix) or Rule 18.2(a)(i), the publication of any declaration under Article 21(2) or Article 22(2) shall indicate:

(i) the fact that the publication relates to a declaration made under Article 21(2) or 22(2), as the case may be,
(ii) the State or States in respect of which the declaration was made and the numbers of the relevant national or Madrid registrations,
(iii) the international registration number of the international registration to which the declaration relates,
(iv) the name of the owner of the international registration.

(b) Unless effected by virtue of Rule 19.1, the notification of any declaration under Article 21(2) or 22(2) shall consist of an indication that the declaration made under Article 21(2) or 22(2), as the case may be, was recorded by the International Bureau and shall be accompanied by a copy of the declaration.

Rule 28

Transmittal of Documents to the International Bureau

28.1 *Place and Mode of Transmittal*

(a) International applications, requests, demands, notifications and any other documents intended for filing, notification or other communication to the International Bureau shall be deposited with the competent service of that Bureau during the office hours fixed in the Administrative Instructions, or mailed to that Bureau.

(b) Where any document is transmitted to the International Bureau in response to an invitation by that Bureau bearing a reference number, the document shall indicate such reference number.

(c) Where paragraph (b) does not apply, any document transmitted to the International Bureau shall:

(i) where it relates to an international application, be accompanied by a copy of such application,

(ii) where it relates to an international registration, indicate, by its international registration number, the international registration to which it relates; it may also contain an indication of the mark as provided fror in Rule 20.1(b).

(d) Paragraph (c) shall not apply in those cases where these Regulations contain specific provisions on the identification of the international application or registration to which any document transmitted to the International Bureau relates.

28.2 *Date of Receipt of Documents*

Any document received by the International Bureau through deposit or mail shall be considered to have been received on the day on which it is actually received by that Bureau, provided that, when it is actually received after office hours, or on a day when the Bureau is closed for business, it shall be considered to have been received on the next subsequent day on which the Bureau is open for business.

Rule 29

Signature

29.1 Legal Entity

(a) Where any document submitted to the International Bureau is signed by a legal entity, the name of the legal entity shall be indicated in the place reserved for signature and shall be accompanied by the signature of the natural person or persons entitled to sign for such legal entity according to the national law of the State under whose law the legal entity was established.

(b) Paragraph (a) shall apply, *mutatis mutandis,* to partnership or firms composed of attorneys or patent or trademark agents but which are not legal entities.

29.2 *Exemption from Certification*

No signature provided for under the Treaty or these Regulations shall require authentication, legalization or other certification.

Rule 30

Calendar; Computation of Time Limits

30.1 *Calendar*

The International Bureau, national Offices, applicants and owners of international registrations shall, for the purposes of the Treaty and these Regulations, express any date in terms of the Christian era and the Gregorian calendar.

30.2 *Periods Expressed in Years, Months, or Days*

(a) When a period is expressed as one year or a certain number of years, computation shall start on the day following the day on which the relevant event occurred, and the period shall expire in the relevant subsequent year in the month having the same name and on the day having the same number as the month and the day on which the said event occurred, provided that if the relevant subsequent month has no day with the same number the period shall expire on the last day of that month.

(b) When a period is expressed as one month or a certain number of months, computation shall start on the day following the day on which the relevant event occurred, and the period shall expire in the relevant subsequent month on the day which has the same number as the day on which the said event occurred, provided that if the relevant subsequent month has no day with the same number the period shall expire on the last day of that month.

(c) When a period is expressed as a certain number of days, computation shall start on the day following the day on which the relevant occurred, and the period shall expire on the day on which the last day of the count has been reached.

30.3 *Local Dates*

(a) The date which is taken into consideration as the starting date of the computation of any period shall be the date which prevails in the locality at the time when the relevant event occurred.

(b) The date on which any period expires shall be the date which prevails in the locality in which the required document is filed or the required fee is paid.

30.4 *Expiration on a Non-Working Day*

If the expiration of any period during which any document or fee must reach the International Bureau or any of its agenices falls on a day on which such Bureau or agency is not open for business, or on which ordinary mail is not delivered in Geneva or the locality in which the agency is situated, the period shall expire on the next subsequent day on which neither of the said two circumstances obtains.

Rule 31

Payment of Fees

31.1 *Payment to the International Bureau*

All fees due under the Treaty and these Regulations shall be payable to the International Bureau.

31.2 *Applicable Fee Schedule*

The fees payable shall be:

(i) where they concern an international application or a request for the recording of a later designation, the fees in force on the date the international application or the request for the recording of the later designation is received by the International Bureau or, where the application or request has been filed through the intermediary of a national Office under Article 5(3), on the date on which it was received by that Office,

(ii) where they concern a demand for renewal, the fees in force on the date which precedes by 6 months the starting date of the term of renewal.

31.3 *Currency*

(a) Subject to paragraph (b), all fees due under the Treaty and these Regulations shall be payable in Swiss currency.

(b) Where the International Bureau has agencies, the Administrative Instructions may, under specified conditions, allow exceptions to paragraph (a).

31.4 *Deposit Accounts*

(a) Any natural person or legal entity may open a deposit account with the International Bureau or any or its agencies.

(b) The details concerning deposit accounts shall be provided in the Administrative Instructions.

31.5 *Indication of the Mode of Payment*

(a) Unless the payment is made in cash to the cashier of the International Bureau, the international application, and any request, demand, or other document, filed with the International Bureau in connection with any international registration, subject to the payment of any fee, shall indicate:

(i) the name and address, as provided in Rule 5.2(a) and (c), of the natural person or legal entity making the payment, unless the payment is made by a cheque attached to the document,

(ii) the mode of payment, which may be by an authorization to debit the amount of the fee to the deposit account of such person or entity, or by transfer to a

bank account or to the postal cheque account of the International Bureau, or by cheque. The Administrative Instructions shall provide the details, in particular those governing the kind of cheques that shall be accepted in payment.

(b) Where the payment is made pursuant to an authorization to debit the amount of the fee to a deposit account, the authorization shall specify the transaction to which it relates unless there is a general authorization to debit to a specified deposit account any fee concerning a certain applicant, owner of an international registration, or duly appointed representative.

(c) Where the payment is made by transfer to a bank account or to the postal cheque account of the International Bureau, or by a cheque not attached to the international application, request, demand, or other document, the notification of the transfer or the cheque (or paper accompanying it) shall identify the transaction to which the payment relates, in the manner to be provided for in the Administrative Instructions.

31.6 *Effective Date of Payment*

Any payment shall be considered to have been received by the International Bureau on the date indicated hereinbelow:

(i) if the payment is made in cash to the cashier of the International Bureau, on the date on which such payment is made,

(ii) if the payment is made by debiting a deposit account with the International Bureau pursuant to a general authorization to debit, on the date on which the international application, the request for the recording of later designation, the demand for renewal or other document entailing the obligation to pay fees is received by the International Bureau, or in the case of a specific authorization to debit, on the date on which the specific authorization is recieved by the International Bureau,

(iii) if the payment is made by transfer to a bank account or to the postal cheque account of the International Bureau, on the date on which such account is credited,

(iv) if the payment is made by cheque, on the date on which the cheque is received by the International Bureau, provided that it is honored upon presentation to the bank on which the cheque is drawn.

Rule 32

Withdrawals and Renunciations

32.1 *Withdrawal of the International Application or Request for Recording of Later Designation*

(a) Any withdrawal of an international application shall be treated as such by the International Bureau if the communication of withdrawal reaches it before preparations for publication have been completed.

(b) Any withdrawal of a request for the recording of later designation shall be treated as such by the International Bureau if the communication of withdrawal reaches it before preparations for publication have been completed.

32.2 *Renunciation of the International Registration or of Certain Designations*

(a) The owner of the international registration may, at any time, renounce the international registration or the recording of the designation of any designated State.

(b) Renunciation of the recording of all designated States shall be treated as renunciation of the international registration.

32.3 *Procedure*

(a) Withdrawals and renunciations referred to in Rules 32.1 and 32.2 shall be effected in a written communication addressed to the International Bureau and signed by the applicant or the owner of the international registration, as the case may be. The International Bureau shall acknowledge receipt of this communication.

(b) In the case of any withdrawals, the International Bureau shall reimburse to the applicant or the owner of the international registration any State designation fee which it received from him in connection with any State affected by the withdrawal.

(c) The International Bureau shall record and publish renunciations, and shall notify interested designated Offices thereof. The details shall be provided in the Administrative Instructions.

Rule 33

Choice Between Individual and Standard State Fees

33.1 *Initial Choice*

Any Contracting State shall choose between individual and standard State fees in a written declaration addressed to the International Bureau at the same time as it deposits its instrument of ratification or accession. If it chooses individual State fees, the declaration shall also indicate the amounts of those individual State fees in Swiss francs. The choice of the Contracting State shall become effective and the amounts indicated shall be applicable from the date on which such State becomes bound by the Treaty. Where the Contracting State fails to indicate its choice at the prescribed time, or where it chooses individual State fees but fails to indicate their amounts in Swiss francs, it shall be considered to have chosen standard States fees.

33.2 *Change in Choice*

Any Contracting State may at any time indicate, in a written declaration addressed to the International Bureau, that it wishes to choose standard State fees instead of individual State fees or vice versa, provided that, in the latter case, the declaration shall indicate also the amounts of the individual State fees. The change in choice shall apply from Jan. 1 of that calendar year which commences at the expiration of at least 6 months after the date on which the International Bureau received the declaration. If the desired change is for individual State fees but the declaration fails to indicate their amounts in Swiss francs, the declaration shall be treated as if it had not been made.

Rule 34

Change in the Amounts of Individual State Fees

34.1 *Communication; Effective Date*

Any change in the amounts of individual State fees, expressed in Swiss francs, shall be communicated in writing by the interested national Office to the International Bureau. The amounts so communicated shall be applicable as from Jan. 1 of that calendar year which commences at the expiration of at least 6 months after the date on which the International Bureau receives the communication.

Rule 35

State Fees

35.1 *Individual State Fees*

(a) The International Bureau shall in every calendar year transfer to any interested designated Office the fees referred to in Article 18(3)(d) that are collected in respect of international registrations, recordings of requests for later designations, and recordings of renewals, effected in the preceding calendar year.

(b) Further details shall be provided in the Administrative Instructions.

35.2 *Standard State Fees*

(a) The coefficient referred to in Article 18(4)(b) shall be:

(i) 2, if the national law provides only for examination of "absolute grounds of nullity,"
(ii) 3, if the national law provides for examination as to whether there is conflict with another mark ("relative grounds of nullity") and if such examination is carried out only where there is third-party opposition,
(iii) 4, if the national law provides for examination of relative grounds of nullity ex officio and without third-party opposition,
(iv) 5, if the national law provides for examination of relative grounds of nullity ex officio followed by the possibility of third-party opposition.

(b) Further details shall be provided in the Administrative Instructions.

Rule 36

Fees Belonging to the International Bureau

36.1 *Fees Belonging to the International Bureau*

All fees and charges collected under the Treaty, these Regulations and the Administrative Instructions, except those referred to in Article 18(2), shall belong to the International Bureau.

Rule 37

Recordings Effected by National Offices

37.1 *Notification*

The notification by the national Office provided for in Article 20(1) shall be made on a form furnished by the International Bureau and the details of which are provided in the Administrative Instructions.

37.2 *Annotation and Publication*

The Administrative Instructions shall provide for the extent to which annotations of any changes notified under Article 20(2) shall be made in the International Register of Marks and shall be published by the International Bureau, provided that such annotation and such publication shall at least indicate the international registration number of the mark, the State which it concerns, the date on which it was received, and its subject matter.

Rule 38

Changes in Addresses

38.1 *Recording and Publication*

(a) The International Bureau shall, on request, record and publish, free of charge, any change in the address of the owner of the international registration or his representative.
(b) The request shall be signed.

Rule 39

Recording and Publication Concerning Representatives

39.1 *Recording*

(a) Where a representative is appointed, the appointment shall be recorded.
(b) Where the appointment of a representative is revoked or renounced, the revocation or the renunciation shall be recorded.

39.2 *Publication*

(a) Where a representative is appointed, his appointment, including his name and address, shall be published.
(b) Where the appointment of a representative is revoked or renounced, the revocation or the renunciation shall be published unless, at the time the publication could be effected, the appointment of another representative is published.

Rule 40

The Gazette

40.1 *Contents and Title of the Gazette*

(a) All matters which, according to the Treaty or these Regulations, the International Bureau is obliged to publish shall be published in a periodical entitled "International Marks Gazette/*Gazette internationale des marques*".
(b) The Administrative Instructions may provide for the inclusion of other matters in the Gazette.

40.2 *Frequency of Issue of the Gazette*

The Gazette shall be issued once a week.

40.3 *Languages of the Gazette*

(a) The Gazette shall be issued in a bilingual (English and French) edition.
(b) The Administrative Instructions shall identify those portions which require translation and those portions which do not require translation.
(c) Matters which can be easily understood even if not translated (for example, the names of the designated States), or which are indicated by signs or abbreviations (for example, "Ren." for "Renewal/*Renouvellement*") to which the keys shall be published in each issue, need not be translated. The details shall be provided in the Administrative Instructions.
(d) Matters not falling within the scope of paragraph (c) (for example, the lists of goods and/or services) shall always be published in both languages. The publication shall indicate which is the original language. Translations shall be prepared by the International Bureau. In case of any divergence between the original and the translation, all legal effects shall be governed by the original.

40.4 *Sale of the Gazette*

The subscription and other sale prices of the Gazette shall be fixed in the Administrative Instructions.

40.5 *Copies of the Gazette for National Offices*

(a) Before July 1 of each year each national Office shall notify the International Bureau of the number of copies of the Gazette which it wishes to receive in the next subsequent year.
(b) The International Bureau shall make the requested number of copies available to the national Office:
(i) free of charge, up to the same number as the number of units corresponding to the class chosen under the Paris Convention for the Protection of Industrial Property by the Contracting State of which the said Office is the national Office,
(ii) at half of the ordinary subscription or sale price, for copies in excess of the said number.

(c) Copies given free of charge or sold under paragraph (b) shall be for the internal use of the national Office which has requested them.

40.6 *Errors in Publications*

(a) Any error in the Gazette may be rectified by the International Bureau through publication of an appropriate corrigendum.
(b) Any national Office and any interested person may call any error in the Gazette to the attention of the International Bureau.

40.7 *Further Details*

Further details concerning the Gazette may be provided in the Administrative Instructions.

Rule 41

Copies and Other Information Available to the Public

41.1 *Copies and Information Concerning International Applications and International Registrations*

(a) Any person may obtain from the international Bureau, against payment of a fee whose amount shall be fixed in the Administrative Instructions, certified or uncertified copies or extracts of the international registration or of any document in the file of any internation-

al application or international registration. Each copy or extract shall reflect the situation of the international registration or of the file, or parts of such registration or file, on a specific date; such date shall be indicated in the said copy or extract.

(b) On request and against payment of a fee whose amount shall be fixed in the Administrative Instructions, any person may obtain from the International Bureau oral or written information, or information by telecopier devices, on any fact appearing in any document in the file of any international application or international registration.

(c) Notwithstanding paragraphs (a) and (b), the Administrative Instructions may waive the obligation to pay any fee where the work or the expense connected with the furnishing of a copy, extract, or information is minimal.

Rule 42

Regional Marks

42.1 *Declaration Under Article 25(1)(a)*

(a) The declaration referred to in Article 25(1)(a) shall be in writing and shall be addressed to the International Bureau. It shall be effective as from the date or event specified in the declaration, provided that it shall not become effective prior to the expiration of 2 months from the receipt of the declaration by the International Bureau.

(b) The declaration shall be promptly published by the International Bureau.

42.2 *Fees*

Rules 9, 13, 25.3, 33 and 34 shall apply *mutatis mutandis,* in the case referred to in Article 25(2).

Rule 43

Procedure Where Correction of Errors of the International Bureau is Sought

43.1 *Time Limit Under Article 30*

The time limit referred to in Article 30(1) shall be:

(i) where the alleged error may be discovered on the basis of a notification sent by the International Bureau to the applicant or the owner of the international registration, 2 months from the date of such notification,

(ii) where item (i) does not apply and the alleged error may be discovered on the basis of a publication of the International Bureau, 2 months from the date of such publication,

(iii) where neither item (i) nor item (ii) applies, the time limit provided for in the national law.

43.2 *Application of Rule 16*

Rule 16 shall apply, *mutatis mutandis,* in respect of Article 30.

RULES CONCERNING CHAPTER II

Rule 44

Expenses of Delegations

44.1 *Expenses Borne by Governments*

The expenses of each delegation participating in any session of the Assembly and in any committee, working group or other meeting dealing with matters of concern to the Union shall be borne by the Government which has appointed it.

Rule 45

Absence of Quorum in the Assembly

45.1 *Voting by Correspondence*

(a) In the case provided for in Article 32(5)(b), the International Bureau shall communicate any decision of the Assembly (other than decisions relating to the Assembly's own procedure) to the Contracting States which were not represented when the decision was made and shall invite them to express in writing their vote or abstention within a period of 3 months from the date of the communication.

(b) If, at the expiration of the said period, the number of Contracting States having thus expressed their vote or abstention attains the number of Contracting States which was lacking for attaining the quorum when the decision was made, that decision shall take effect provided that at the same time the required majority still obtains.

Rule 46

Administrative Instructions

46.1 *Establishment of Administrative Instructions; Matters Governed by Them*

(a) The Director General shall establish Administrative Instructions. He may modify them. They shall deal with matters in respect of which these Regulations expressly refer to such Instructions and with details in respect of the application of these Regulations.

(b) Before establishing the Administrative Instruction and before modifying any provision thereof which affects national Offices, the Director General shall communicate to the interested Offices the text of the intended provisions and shall invite the said Offices to notify him of any observations they might wish to make.

(c) All forms of interest to applicants and owners of international registrations shall be included in the Administrative Instructions.

46.2 *Control by the Assembly*

The Assembly may invite the Director General to modify any provision of the Administrative Instructions, and the Director General shall proceed accordingly.

46.3 *Publication and Effective Date*

(a) The Administrative Instructions and any modification thereof shall be published in the Gazette.

(b) Each publication shall specify the date on which the published provisions become effective. The date need not be the same for all the provisions provided that no provision may be declared effective prior to the expiration of a period of one month after the publication date of that issue of the Gazette in which it was published.

46.4 *Conflict with the Treaty and the Regulations*

In the case of conflict between any provision of the Administrative Instructions and any provision of the Treaty or of these Regulations, the latter shall prevail.

ANNEX TO THE REGULATIONS

Table of Fees

The fees marked by an asterisk apply to the States which have chosen the standard State fee system (see Articles 18(2) and (4)). Where, either because of the choice exercised by the applicant or the owner of the international registration under Article 5(1)(a)(vi) or 6(2)(a)(v), or because only a regional mark is available, the designation of one or more States party to a regional treaty has the same effect as if an application for the registration of the mark in the regional register of marks had been filed, the fees marked by an asterisk shall be payable once even if the regional registration effect extends to more than one State party to the regional treaty.

	Kind of Fee	*Amount in Swiss francs*
1.	*Application*	
1.1	International Application Fee (Rule 9.1(a)(i)): irrespective of the number of designated States and of the numbers of classes	400
1.2	*Standard State Designation Fee (Rule	

	9.1(a)(ii): for each designated State to which the Standard Fee System applies .	[1]30
1.3	Color Reproduction Fee (Rule 9.1(a)(i)) . . .	100
2.	*Later Designation*	
2.1	International Later Designation Fee (Rule 13.1 (a)(i)): irrespective of the number of designated States and of the number of classes	100
2.2	*Standard State Designation Fee (Rule 13.1(a)(ii)): for each designated State to which the Standard Fee System applies .	[1]30
2.3	Color Reproduction Fee (Rule 13.1(a)(ii)): .	100
3.	*Change in Ownership*	
3.1	Request for Recording Change in Ownership Fee (Rule 22.1(g))	100
4.	*Change in the Name of the Owner—Request for Recording Change in the Name of the Owner (Rule 23.1(c)):*	
4.1	Where the request relates to one international registration	100
4.2	Where the request relates to more than one international registration	[2]50
5.	*Limitation of List of Goods and/or Services*	
5.1	Request for Recording of Limitation of the List of Goods and/or Services Fee (Rule 24.1(c))	100
6.	*Renewal*	
6.1	International Renewal Fee (Rule 25.3(a)(i)): irrespective of the number of designated States and of the number of classes	400
6.2	Renewal Surcharge (Rule 25.3(a)(i)): irrespective of the number of designated States and of the number of classes	200
6.3	*Standard State Renewal Fee (Rule 25.3(a)(ii)): for each designated State to which the Standard Fee System applies	[1]30
6.4	Color Reproduction Fee (Rule 25.3(a)(i)) . .	100

[1] Multiplied by the number of classes.

[2] For each of the international registrations to which it relates.

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TRADEMARK REGISTRATION TREATY
Implementing Legislation

On September 3, 1975 the Trademark Registration Treaty (TRT), signed at Vienna, Austria, on June 12, 1973, was transmitted by the President to the Senate of the United States with a view to receiving its advice and consent to ratification. Legislation designed to implement the TRT has been prepared by the Patent and Trademark Office in the Department of Commerce.

Following a suggestion by the General Accounting Office, the Patent and Trademark Office is planning a survey of a random sample of United States trademark owners who would have a direct interest in the TRT and in the changes required in United States trademark law. In order to provide the interested public with the information on which the sampled companies will base their responses, the complete draft legislation, including Summary, Statement of Purpose and Need and Sectional Analysis is reproduced below. A copy of the survey questionnaire will be published in a future issue of the OFFICIAL GAZETTE.

The text of the TRT was reproduced in the OFFICIAL GAZETTE *of July 24, 1973. Some post conference documents, including a history of the Treaty, were reproduced in the* OFFICIAL GAZETTE *of Feb. 11, 1974. The report of the United States delegation to the Vienna Conference was reproduced in the* OFFICIAL GAZETTE *of Feb. 11. 1975. Additional copies of the material reproduced below as well as the previous* OFFICIAL GAZETTE *publications are available upon request to the Commissioner of Patents and Trademarks.*

DONALD W. BANNER,
Commissioner of Patents and Trademarks.

July 11, 1978.

SUMMARY

In 1973, the United States and thirteen other countries signed the Trademark Registration Treaty. This Treaty was transmitted to the Senate on September 3, 1975, with a view to advice and consent to receiving its ratification.

The Trademark Registration Treaty will establish an international trademark filing arrangement, through which persons and companies residing in one of the member States can more easily register trademarks (including service marks, and collective and certification marks) and maintain these property rights in all of the member States. Since the Treaty is not self-executing, the instrument of United States ratification will not be deposited until the necessary implementing legislation is enacted.

The proposed implementing legislation effects the necessary changes in the trademark statutes and provides to persons filing domestic applications the same benefits in the United States as those accorded under the Treaty. The implementing legislation would not come into force until the Treaty enters into force. Entry into force requires the deposit of instruments of ratification or accession by five States.

STATEMENT OF PURPOSE AND NEED

The enclosed bill would amend the Trademark Act of 1946 (60 Stat. 427, as Amended, 15 U.S.C. 1051 et seq.) to implement the Trademark Registration Treaty and make certain of its benefits available to persons filing national applications for United States trademark registration.

First, the bill would implement the Trademark Registration Treaty (TRT), an agreement adopted on June 12, 1973, by the Vienna Diplomatic Conference on Industrial Property to facilitate the protection of trademarks used or intended to be used in international commerce. This Treaty was signed by the United States and was transmitted by the President to the Senate of the United States on September 3, 1975, with a view to receiving its advice and consent to ratification.

Ratification of the Treaty and its implementation by this bill would enable United States nationals and residents to avail themselves of the advantages offered by the Treaty when it has entered into force with respect to the United States. In addition to the procedural implementing provisions, the bill would effect certain changes in the Trademark Act of 1946 (60 Stat. 427, as Amended, 15 U.S.C. 1051 et seq.) that are required to be made in order to comply with certain conditions and requirements of the Trademark Registration Treaty. These changes would not come into effect until the entry into force of the Treaty.

Second, the bill also makes modifications in the present law to provide to United States nationals and residents the same benefits when filing national applications for trademark registration in the United States Patent and Trademark Office as would be available to such applicants in the United States if filing under the Treaty.

Purpose of Trademark Registration Treaty

The Trademark Registration Treaty has as its primary purpose the establishment of a trademark filing arrangement through which persons and companies residing in one of the member States can more easily register trademarks (including service marks, and collective and certification marks) and maintain these property rights in all of the member States. Separate actions in approximately 150 jurisdictions (i.e. States, possessions, territories, etc.) are now required by United States companies in order to extend the protection of a trademark throughout the world. The complexity and high cost of establishing and protecting trademarks in international markets through the diverse national laws and procedures is a serious problem for businessmen seeking to further their commercial objectives by the sale of trademarked products across national boundaries. However, if trademark protection in potential foreign markets is not secured promptly, the unprotected mark is frequently appropriated by a "pirate" or may even be coincidentally adopted by another.

The entry into force of the Trademark Registration Treaty would help alleviate these problems by establishing an alternative international registration procedure through which the effects of national trademark registration in member countries could be secured, maintained and renewed on a central international register of marks. With a few exceptions, the effects of international registration in each participating State would remain subject to the substantive requirements of the national laws of such State.

History of Treaty Development

The Trademark Registration Treaty is the culmination of continuous efforts, since 1965, by the United States, to participate in an acceptable international arrangement to facilitate the protection of trademarks in international commerce. Consideration was first given to the possibility of United States adherence to the Madrid Agreement for the International Registration of Marks, a special arrangement under the Paris Convention for the Protection of Industrial Property. The Madrid Agreement, in force since 1891, has long operated successfully among twenty-three countries, principally European.

By 1968, it became apparent that there was substantial U.S. private sector opposition to adherence to the Madrid Agreement in its present form, largely because of certain of its features which, it was argued, would be contrary to the interests of United States firms.

From 1968 to 1970, there were efforts to revise the Madrid Agreement to correct these alleged deficiencies, but these efforts were not successful. However, whereas there was opposition to our adherence to the Madrid Agreement, interested private groups continued to urge United States participation in an acceptable trademark registration treaty.

In September, 1970, a United States sponsored resolution to develop a new trademark registration treaty was

adopted unanimously by the competent administrative organs of the Paris Convention. After several drafts and examinations by three Committees of Experts and several Consultants' groups, a final draft was considered at a diplomatic conference held in Vienna, Austria, from May 17 to June 12, 1973. Fifty States and thirty-one international organizations (governmental and non-governmental) were represented at the conference. On June 12, 1973, the Trademark Registration Treaty was signed by eight countries, including the United States, and remained open for signature until Dec. 31, 1973, by which date a total of fourteen countries had become signatories. The Treaty will enter into force six months after five States have deposited their instruments of ratification or accession. To date, none of the signatory States has ratified the Treaty. Four States (Congo, Gabon, Togo, and Upper Volta) have deposited instruments of accession.

Main Features of Treaty

The Trademark Registration Treaty will establish a multilateral trademark filing arrangement for residents or nationals of its member countries, which provides easier procedures for securing, administering and maintaining national trademark registration effects in other countries by filing a single international application, securing a single international registration and maintaining a record of such rights on a central international register. International registration amounts to central recording of a "bundle of national rights" rather than a separate property right.

With some exceptions (as noted below), the substantive aspects of rights are regulated by each member State according to its national law. The main features of the Treaty are as follows:

1. A national or resident of a member State may file directly with the International Bureau of the World Intellectual Property Organization an international application designating the States in which protection of the trademark is desired. Any number of States, including the applicant's home State, may be designated.

2. The international application may claim the priority (Paris Convention "right of priority") of an earlier first application to register the same trademark.

3. The application is subject to an international fee plus a fee for each designated State (not higher than 100% of the total fees for national registration).

4. After a brief examination as to formal requirements, the trademark is registered by the International Bureau. The details of the international registration are promptly published in English and French in an international gazette and communicated to each of the designated States.

5. Unless refused by a designated State, the international registration is accorded the same legal effect as if the same trademark were registered nationally in that State. The time limit for the initial notice of refusal, including all reasons or possible reasons for refusal, is fifteen months from the date of the international publication. The reasons for refusal cannot be different from those applicable to national applications.

6. If initially refused by any designated State, the owner is notified of the refusal and is guaranteed the same procedural rights of re-examination and/or remedies available in the case of refusals of national trademark applications. Further proceedings are not subject to any Treaty time limits, and are carried out directly between the owner and the concerned national office.

7. The effects of an international registration may be cancelled in any designated State according to the national law of that State. The effect of cancellation is limited to the State in which the legal action for cancellation was brought.

8. An international registration may be renewed at ten year intervals by a single renewal application filed with the International Bureau.

9. States not originally designated may be added later by requesting the recording of later designations of the new States.

10. Assignments, changes of name, limitations of the goods and/or services, etc. may be recorded by filing a single international request, with the same legal effect as if recorded in the national registers.

11. Non-use of the trademark during an initial period of three years counted from the filing date cannot result in refusal or cancellation by any State. However, any State may require that the owner declare his intention to use the trademark in that State and may further provide in its law that no action for infringement may be commenced until the continuing use of the trademark in that State has started and that any remedy (e.g. damages or profits) may relate only to the period after use has commenced.

The benefits of the Treaty will be available only to nationals or residents of member countries. As to such persons, the Treaty may be used to secure protection in a few countries, or in many, depending upon the extent of the commercial interests.

The Treaty provides that the contracting States shall constitute a Union for the international registration of marks. The provisions for administration of the Union are similar to those established for the Patent Cooperation Treaty, which was transmitted to the Senate on Sept. 12, 1972, and was favorably acted on by that body on Oct. 30, 1973.

The Regulations annexed to the Treaty provide rules concerning administrative requirements and procedures and details useful in implementation of the Articles.

Interest of Other Countries

In addition to the United States, the signatories of the TRT include a number of major trading countries (e.g. Federal Republic of Germany, United Kingdom, Italy, Sweden, Austria). Others are awaiting developments in the United States, which furnished primary impetus to the negotiations. In particular, the interest of most Western European countries is contingent upon United States ratification, primarily because of the existence of the Madrid Agreement. The Trademark Registration Treaty is more modern than the Madrid Agreement, has more advantages for trademark owners and eliminates features which have long inhibited the territorial growth of the Madrid system. However, the position of the Madrid Agreement members is dependent upon the interest of major countries outside that Union in the new arrangement. Of these, the United States is clearly the most important. However, Japan, United Kingdom, Canada, and the Scandinavian group are among other countries outside the Madrid Union which are known to be seriously considering participating in the TRT arrangement, or, failing that, in some other multilateral agreement, such as Madrid.

Main Advantages

The main advantages of the Treaty are the simplified procedures provided in order to secure national registration effects, to maintain the rights thereby acquired, and to continue these rights by renewal. Other benefits are the time limits for national refusal notifications and the limitations on national use requirements.

The Treaty will not be a panacea for all trademark problems. It will establish what is essentially a multilateral trademark filing arrangement, reserving (except for a few points) the substantive aspects of rights to regulation on a country-by-country basis under the national law of each country. However, by limiting participation to States having previously adhered to the Paris Convention for the Protection of Industrial Property, it assimilates or applies the norms and standards of trademark protection law which have been agreed to by the

eighty-seven member countries of that Union over the almost 100 years of its existence. The fact that its filing, maintenance and administrative procedures are independent of national procedures means that a framework for future development of international substantive standards and further rationalization of procedures is provided. Also, since trademark piracy is best dealt with preemptively by prompt filing and diligent maintenance practices, the Treaty attacks this problem directly by facilitating the filing and maintenance procedures.

Even the short range objectives and benefits will not be immediately realized upon United States ratification. Five States must ratify before the Treaty enters into force. To date, only eighteen out of the eighty-seven potential member States have taken positive steps (i.e. fourteen signatories and four adherents). The benefits of simplified filing and maintenance will accrue in proportion to the number of member States.

Effect on U.S. System—Cost

As the Treaty matures in terms of the number of participating States, one of its effects will probably be an increase of foreign origin filings in this country (present foreign origin filings are less than 10% of total filings). It is fundamental that the benefits of simplification accrue in both directions. To the extent that any increased filings reflect existing commercial rights, this result would be consistent with a fundamental purpose of the federal trademark registration system, i.e. the central recording of marks in which rights may exist. Because registration is not mandatory in order to secure rights in a trademark in the United States (and this would not change under the Treaty), the U.S. system is designed to encourage federal registration, in order to provide centralized information to those searching for and selecting new marks for new products or services to be sold in commerce. Part of the increase, as explained later, may result from permitting the filing and registration of marks based on an intent to use as an alternative to actual use.

Since the intent to use amendments to be effected by the bill will not come into force until the date of entry into force of the Treaty, none of the financial consequences will accrue until after that date. It is assumed that entry into force will occur promptly after United States ratification, if not before that date. Assuming action by the 95th Congress, increased incremental costs and manpower requirements of the Patent and Trademark Office have been estimated as shown in the following chart.

ESTIMATED COSTS INCURRED BY RATIFICATION OF TRT AND ENACTMENT OF RELATED LEGISLATION[1]

[Dollar Amounts in Thousands]

	FY 1979		Adjustment for FY 1980		Total FY 1980		Adjustment for FY 1981		Total FY 1981	
	M.Y.	Dollar	M.Y.	Dollar	M.Y.	Dollar	M.Y.	Dollar	M.Y.	Dollar
Operational printing[2]	...	581.9	.....	(+68.7)	....	650.6	.....	(+54.8)	....	705.4
Operational, other[3]	21.7	420.3	(+11.6)	(+252.6)	33.3	672.9	(+7.4)	(+176.1)	40.7	849.0
Start-up[4]	3.0	109.8	(−2.0)	(−73.4)	1.0	36.4	(−1.0)	(−31.5)	....	[5]4.9
	24.7	1,112.0	.....	.....	34.3	1,359.9	.....	.....	40.7	1,559.3

[1] These estimated costs will be partially offset by fees to the same extent as under our national system.

[2] Assumes additional publication of all applications will be required (see discussion of Sections 9 and 10 of bill in the Sectional Analysis).

[3] Includes supervisory, professional and clerical personnel, and mail.

[4] Includes Legislation and International staff, Organization and Systems, and all travel.

[5] Only travel remains.

An important caveat is that many of the assumptions on which the above estimates are based are, at this point, very speculative. Also, since the Treaty provides for the assessment of country designation fees (paid centrally) at a level equal to the fees for national registration, any increased operational costs of the Patent and Trademark Office due to increased filings will be offset to the same extent as under the national system. The above cost estimate does not reflect these partially offsetting fees.

Additional cost factors, too remote for attempting to estimate at this time, involve contributions to the World Intellectual Property Organization (WIPO) which will serve as the International Bureau under the Treaty. Article 34(5) of the Treaty establishes a working capital fund, constituted by a single payment made by each contracting State. Based on the experience in the case of other treaties administered by WIPO, it is believed that consideration of any working capital fund would be deferred, at least, until several years after the Treaty enters into force. The amount of the initial payment of each contracting State to this fund is computed with due regard to the number of international applications which are filed by residents of that State. Thus, a direct relationship exists between the amount of the payment by the United States and the use of the TRT by U.S. companies.

In starting up for operations under the TRT, the International Bureau will have to establish a budget financed from fees and charges for services rendered by the International Bureau, from sales of publications and other miscellaneous income. While the Madrid Agreement, also administered by WIPO, has operated at a profit for many years, and the TRT is designed to be self-supporting under normal circumstances (Article 34(4)), the possibility of deficits cannot be ruled out altogether. Deficits would be covered out of the working capital fund, which fund would then be reimbursed by the States. Deficits are not expected to be of any significant magnitude. Contributions to the working capital fund would be the responsibility of the Department of State.

Effect on U.S. Trademark Law

Participation in the international system will require that our national trademark law be amended in a number of respects. The most fundamental change is one which would permit the securing of a national registration in the United States based on intention to use the trademark applied for, and provide for an initial period of 3 years during which nonuse of the mark could not be a basis for refusing or cancelling such registration. Consistent with the Treaty, the proposed legislation provides that infringement actions in the courts would continue to be contingent upon the commencement of use, however.

As explained by the President in forwarding the Treaty to the Senate for its advice and consent, there is a sharp difference of opinion among interested persons, firms and associations in the United States as to the desirability of making this change, and, to a lesser extent, other less significant changes, required by the Treaty, in our national law.

The essence of the change in United States law is that it would move us from the strict use approach (today held to only by the United States, and a few other countries, e.g. Republic of Philippines, Panama) to the middle position, i.e. a use or intention to use system similar in principle to that of the British. The change is believed to be more consistent with the legitimate needs of businessmen, especially where international trade is contemplated.

Intention To Use Legislation

In fact, legislation permitting the filing of a trademark application based on an intent to use was widely supported in the private sector and, in the 91st Congress, identical House and Senate bills, substantially the same as the earlier Senate bills, were introduced at the request of the Administration (S. 3110, McClellan; H.R. 14050 Kastenmeier). This legislation was not reintroduced in the 93rd and 94th Congresses, however, since it was known at an early stage in the Treaty negotiations that the use requirements of the United States would be affected.

The support of intention to use legislation in the United States had its foundation in domestic concerns. Under present law actual use of a mark is a prerequisite to the filing of an application for registration. Thus, every applicant for federal registration, in addition to other requirements, must specify in his application the date of first use of the mark and the date of first use in commerce over which Congress has control (usually interstate commerce).

As applied to the adoption of new trademarks, the requirement of establishing use of a mark prior to applying for its registration is unrealistic since the time interval between clearance and adoption of a trademark and use of commercial quantities varies from several months to several years depending upon the products involved. Typically, before a consumer product is marketed commercially, there is considerable time and effort expended in the developmental effects. After having undertaken the effort and expense of creating and planning the promotion of a new mark, however, the businessman may find that the mark is not registrable because of conflict with another mark or some other reason. These problems led to the drafting and introduction of intent to use legislation.

Canada, in 1954, after careful study, adopted a system permitting applications for registration on the basis of an owner's proposed use. The Canadian system is favorably regarded by businessmen, as are the intention to use systems of many other nations. Approximately one-half of the trademark applications filed today in Canada are based on proposed use, rather than actual use, evidencing the usefulness and acceptability of the system.

Differences Between Previous Intention To Use Legislation and the Treaty

Although similar in terms of their substantive effect, the "intent to use" amendments previously proposed in this country do not satisfy the requirements of the Treaty. There are two basic differences:

(1) The time period under the Treaty during which use may not be required cannot be less than 3 years, counted from the filing date.

Under the "intent to use" bills, the time period was flexible, depending upon the length of time consumed by the examination, i.e. 90 days, counted from the date of allowance of the application by the examiner (a shorter period if the application were opposed). Although entirely dependent upon pendency experience of the Patent and Trademark Office, the period of permitted non-use of most of the applied for marks under those bills would have been in the approximate range of one to two years, counted from the filing date.

Whereas the Treaty permits the "reserving" of a mark for an initial 3 years, more entended "reserving" may be precluded under Article 19(3) and this is done in the proposed implementing legislation. Thus, the 3 year period cannot be extended except for extraordinary reasons. The fact that an application is still pending at the date of expiration of the 3 years may *not* be accepted as a reason for extension. The use requirements after 3 years are the same as under present law.

(2) Under the Treaty, the national *registration* effect of an international registration may not, for the initial three year period, be refused or cancelled on the ground of non-use. However, any country may provide that the right to sue for infringement of the registered mark (even during the three years) is subject to the condition of use, i.e. no right to sue until after continuous use has commenced; and that any remedy may relate only to the period after use has commenced.

Under the "intent to use" bills, an application could be filed, and priority secured, based on intent to use, without actual use, but the *registration* would not issue until a declaration demonstrating actual use had been filed and accepted.

The implementing legislation takes into account the above differences, as the Treaty requires. Also, in all respects, the benefits to applicants from the 3 year use moratorium are accorded to United States residents filing regular nationals applications in the United States as well as to those applicants filing under the Treaty.

A BILL

To amend the Act entitled "An Act to provide for the registration and protection of trademarks used in commerce, to carry out the provisions of international conventions, and for other purposes," approved July 5, 1946, as amended.

Be it enacted by the Senate and the House of Representatives of the United States of America in Congress assembled, that, in order to carry out the provisions of the Trademark Registration Treaty and extend its benefits to citizens and residents of the United States pursuant to the authority of Congress to regulate commerce within its control, section 1 of the Act entitled "An Act to provide for the registration and protection of trademarks used in commerce, to carry out the provisions of international conventions, and for other purposes," approved July 5, 1946 (60 Stat. 427), as amended, is amended to read as follows:

"(a) Any person who is the owner of a trademark which is used or intended to be used in commerce may register that trademark on the principal register hereby established, subject to the conditions and requirements of this Act.

"(b) Application by a person described in section 1(a) to register a trademark on the principal register may be made:

(1) By paying in the Patent and Trademark Office the filing fee and filing in such Office—

(A) A written application, in such form as may be prescribed by the Commissioner, signed by the applicant or by a duly appointed representative of the applicant, specifying the applicant's domicile and citizenship and the particular goods in connection with which the trademark is used or intended to be used in commerce;

(B) A drawing of the trademark;

(C) Except where the declaration under section 1(c) is filed together with the application, a declaration of the applicant's intention to use the trademark in commerce in connection with the goods specified in the application;

and by complying with such rules or regulations, not inconsistent with law, as may be prescribed by the Commissioner; or

(2) By designating the United States in an international registration, or in the recording of any later designation in an international registration, published and notified to the Patent and Trademark Office in conformity with the Trademark Registration Treaty: *Provided, That—*

(A) the person applying was entitled to file international applications, is entitled to own international registrations, and is the Owner of the international registration of the trademark sought to be registered under this Act; and

(B) a declaration of such person's intention to use the trademark in commerce in connection with the goods specified in the international registration is notified to the Patent and Trademark Office in conformity with the said Treaty.

"A person whose international application, or request for the recording of later designation, designating the United States, has been declined by the International Bureau may apply to register the same trademark under paragraph (1) of this subsection. If the application under paragraph (1) is filed in the Patent and Trademark Office prior to the expiration of two months, counted from the date of the notification by the International Bureau of its declining of the corresponding international application or request, and if the Commissioner determines that such declining was not justified, the application shall be treated as if it had been filed on the date which would have been the international registration date or the recording date of the later designation had the declining not taken place.

"(c)(1) The applicant of an application for registration under this Act, or the registrant of a registration issued on the basis of such application, shall file in the Patent and Trademark Office, in such form as may be prescribed by the Commissioner, a declaration stating that the trademark is in use in commerce and that such use commenced on or prior to the date of expiration of three years counted from the filing date of the application, and specifying the date of his first use of the trademark, the date of his first use of the trademark in commerce, those of the particular goods identified in the registration, or, if the registration has not been issued, in the application for registration, in connection with which the trademark is used, and the mode or manner in which the trademark is used in connection with such goods. The declaration shall be signed by the registrant or his duly appointed representative, or, if the registration has not been issued, by the applicant or his duly appointed representative, and it shall be accompanied by such number of specimens or facsimiles of the trademark as actually used as may be prescribed by the Commissioner. Where the declaration concerns an application filed under, or registration issued pursuant to, section 1(b)(2), it may, in such

form as may be prescribed by the Commissioner or in the form prescribed by the Trademark Registration Treaty, be filed with the International Bureau, with the same effect as if it had been filed in the Patent and Trademark Office on the date on which it was received by the International Bureau.

(2) The declaration under paragraph (1) of this subsection may be filed together with the application to which it pertains, or later: *Provided,* That unless such declaration has been filed prior to the expiration of four years, counted from the filing date, the Commissioner shall cancel the registration, if issued, or refuse the application for registration, if pending. If the declaration is accepted in respect of fewer than all of the goods stated in the registration or identified in the application, the application or registration shall be limited by the Commissioner to those of the particular goods specified in the declaration in connection with which the mark is in use in commerce.

(3) If an application for registration is pending after the expiration of the three-year period referred to in paragraph (1) of this subsection, or if a registration is relied upon in an opposition or cancellation proceeding under this Act which was filed, or which is pending, after the expiration of such period, the Commissioner may require that the declaration under this subsection in respect of such application or registration be filed within such earlier period as he may prescribe: *Provided,* That such earlier period shall not expire earlier than 2 months, counted from the date of a notice mailed to the applicant or registrant.

(4) If a person who applied for registration of a trademark under this Act, or any successor, assignee or related company of such applicant, shall subsequently apply for registration under this Act of the same or a substantially equivalent trademark on or prior to the date of expiration of five years from the filing date of the said earlier application in respect of all or fewer than all of the goods recited in the said earlier application, the three-year period referred to in paragraph (1) of this subsection shall, in respect of those of the goods which are the same, be counted from the filing date of the said earlier application, or if there were more than one such earlier application, from the filing date of the earliest of them: *Provided,* That this paragraph shall not be applicable if a declaration of use conforming to the requirements of this subsection is filed together with the said subsequently filed application.

(5) Upon a satisfactory showing by the applicant or registrant that his failure to commence use of the mark in commerce on or prior to the date of expiration of the three-year period referred to in paragraph (1) of this subsection was due to extraordinary circumstances which excuse such failure and was not due to any intention to abandon the mark, the Commissioner may extend the date of expiration of the said period and of the time limit for filing the declaration under this subsection: *Provided,* That the said expiration dates may not be extended for the reason that the application for registration was pending after the date of expiration of the said three-year period.

(6) The Commissioner shall notify the applicant or registrant who files the above prescribed declaration of his acceptance or refusal thereof and, if a refusal, the reasons therefor.

"(d) In any application in respect of which the declaration under section 1(c) has been filed, the applicant may claim concurrent use. If concurrent use is claimed, the applicant shall state exceptions to his claim of exclusive use, in which he shall specify, to the extent of his knowledge, any concurrent use by others, the goods in connection with which and the areas in which each concurrent use exists, the periods of each use, and the goods and area for which the applicant desires registration.

"(e) If the applicant is not domiciled in the United States he shall designate by a written document filed in the Patent and Trademark Office the name and address of some person resident in the United States on whom may be served notices or process in proceedings affecting the trademark. Such notices or process may be served upon the person so designated by leaving with him or mailing to him a copy thereof at the address specified in the last designation so filed. Unless filed with the application, the document designating such person shall be filed on or prior to the date on which the applicant, or the registrant of any registration issued on the basis of such application, replies to any communication by the examiner, or otherwise institutes or defends any proceeding under this Act, relating to such application or registration. Until such person has been designated, or if the person so designated cannot be found at the address given in the last designation, such notices or process may be served upon the Commissioner."

Sec. 2 The first sentence of section 3 of such Act is amended by striking out "used in commerce".

Sec. 3 The first sentence of section 4 of such Act is amended by striking out "used in commerce" and by inserting, following "exercising", the words "or intending to exercise".

Sec. 4 Section 5 of such Act is amended by inserting, following "used" (first occurrence), the words, "or is intended to be used,"; and by inserting, following "use" (both occurrences), the words "or intention to use".

Sec. 5(a) The second sentence of section 7(a) of such Act is amended by inserting, following "date" (third occurrence), the words "of issue"; by striking out "date on which the application for registration was received in the Patent and Trademark Office" and inserting in lieu thereof the words "filing date"; and by changing the period at the end of the sentence to a colon and adding the following proviso:

"*Provided,* That if the declaration under section 1(c) has not been filed, this fact shall be indicated in lieu of the dates of first use of the mark."

(b) A new sentence is added to section 7(a) of such Act reading as follows: "The Commissioner shall cause a notice concerning the issuance of the registration to be published in the Official Gazette of the Patent and Trademark Office."

(c) Section 7(b) of such Act is amended to read as follows:

"Subject to any conditions and limitations stated therein, a certificate of registration of a mark upon the principal register provided by this Act shall be prima facie evidence of the validity of the registration, of the registrant's ownership of the mark, and of the right of the registrant to prevent registration under this Act by any other person, except a lawful concurrent user, of the mark either in the identical form as reproduced in the registration, or in such near resemblance thereto as to be likely, when applied to the goods or services of such other person, to cause confusion or to cause mistake, or to deceive."

(d) Section 7(d) of such Act is amended by inserting, preceding the first sentence of such subsection, "(1)" and by adding, at the end thereof, the following new paragraphs:

"(2) The registrant of any registration under this Act may limit the goods and/or services specified in his registration by filing an application, in such form as may be prescribed by the Commissioner, for the recording of such limitation or, in the case of a registration issued on the basis of an application under section 1(b)(2), or renewed pursuant to section 9(b)(2), by filing at the International Bureau a request for the recording of a limitation, in respect of the United States, of the goods and/or services of the international registration on the basis of which such registration was issued. The Commissioner shall refuse to record any limitation request-

ed by the registrant if its effect would be to enlarge the scope of the goods and/or services beyond that of the goods and/or services specified in the registration. The recording by the International Bureau of a limitation of the goods and/or services, in respect of the United States, of an international registration shall, unless refused by the Commissioner, have the same effect as if such limitation had been entered in the records of the Patent and Trademark Office on the same date of such recording."

"(3) Where the Commissioner has limited the goods and/or services of any registration pursuant to the provisions of paragraph (2) of this subsection, or sections 1(c)(2), 8(a)(2), or 9(c)(2) of this Act, appropriate entry of such limitation shall be made in the records of the Patent and Trademark Office and, if requested by the registrant, upon the certificate of registration or, if such copy is lost or destroyed, upon a certified copy thereof."

(e) Section 7 of such Act is amended by adding, after subsection 7(g), the following new subsection:

"(h)(1) Appropriate entry shall be made in the records of the Patent and Trademark Office of any recording notified to it by the International Bureau in respect of a registration issued on the basis of an application under section 1(b)(2), or renewed pursuant to section 9(b)(2), unless the effect of such recording has been refused in conformity with the provisions of this Act or of the Trademark Registration Treaty.

(2) The Commissioner shall notify the International Bureau as provided in the Trademark Registration Treaty before making any entry, other than as specified in paragraph (1) of this subsection, in the records of the Patent and Trademark Office in respect of a registration issued on the basis of an application under section 1(b)(2), or renewed pursuant to section 9(b)(2), and the entry in such records shall not be made until the corresponding entry has been annotated and published by the International Bureau as provided in the said Treaty."

Sec. 6 Section 8(a) of such Act is amended to read as follows:

"(1) The initial term of a registration under this Act shall be 10 years counted from the filing date:

Provided, That the registration of any mark under the provisions of this Act shall be cancelled by the Commissioner at the end of 6 years counted from its date of issue, unless, within 1 year next preceding the expiration of such 6 year period, the registrant shall file in the Patent and Trademark Office, in such form as may be prescribed by the Commissioner, an affidavit or declaration showing that the mark is still in use in commerce. Special notice of the requirement for such affidavit or declaration shall be attached to each certificate of registration. Where the affidavit or declaration concerns a registration issued pursuant to section 1(b)(2), it may, in the form prescribed herein, or in the form prescribed by the Trademark Registration Treaty, be filed with the International Bureau, with the same effect as if it had been filed in the Patent and Trademark Office on the same date as the date on which it was received by the International Bureau.

(2) If the affidavit or declaration of use under paragraph (1) of this subsection is accepted in respect of fewer than all of the goods and/or services stated in the registration, the registration shall be limited by the Commissioner to those of the particular goods and/or services specified in the affidavit or declaration in connection with which the mark is still in use in commerce.

(3) Upon a satisfactory showing by the registrant that his nonuse of the mark in commerce is due to special circumstances which excuse such nonuse and is not due to any intention to abandon the mark, the Commissioner may extend the time for filing the affidavit or declaration under this section."

Sec. 7 Section 9 of such Act is amended to read as follows:

"(a) The owner of a mark which is still in use in commerce may renew his registration of that mark for periods of ten years from the end of each expiring period of the registration, subject to the conditions and requirements of this Act.

"(b) Renewal of a registration by a person described in section 9(a) may be effected:

(1) By paying in the Patent and Trademark Office the prescribed fee and filing in such Office—

(A) within the six months next preceding the date of expiration of the period for which the registration was issued or renewed, an application for renewal: or

(B) prior to the expiration of six months counted from the date of expiration of the period for which the registration was issued or renewed, an application for late renewal, on payment of the additional fee herein prescribed;

and by complying with such rules or regulations, not inconsistent with law, as may be prescribed by the Commissioner; or

(2) By the renewal of an international registration in respect of which the United States is a designated State, published and notified to the Patent and Trademark Office in conformity with the Trademark Registration Treaty, *Provided:* That the person applying is entitled to own international registrations and is the Owner of the international registration of the mark sought to be renewed under this Act.

If the Commissioner refuses an application for renewal of a registration filed under paragraph (1), he shall notify the registrant of his refusal and the reasons therefor. The provisions of section 1(e) shall be applicable to any person not domiciled in the United States who applies for or effects the renewal of a registration under this Act.

"(c)(1) The registrant of a registration renewed under this Act shall file in the Patent and Trademark Office, in such form as may be prescribed by the Commissioner, a declaration stating that the mark is still in use in commerce, and specifying those of the particular goods and/or services identified in the registration on or in connection with which the mark is so used. The declaration shall be signed by the registrant or by his duly appointed representative, and shall be accompanied by a specimen or facsimile showing current use of the mark. Where the renewal is effected pursuant to section 9(b)(2), the declaration may, in the form prescribed herein, or in the form prescribed by the Trademark Registration Treaty, be filed with the International Bureau, with the same effect as if it had been filed in the Patent and Trademark Office on the date on which it was received by the International Bureau.

(2) The declaration under paragraph (1) of this subsection may be filed together with the application for renewal under section 9(b)(1), or, in the case of a renewal effected pursuant to section 9(b)(2), with the demand for renewal of the corresponding international registration filed with the International Bureau, or later: *Provided,* That unless such declaration has been filed prior to the expiration of six months, counted from the starting date of the term of renewal, the Commissioner shall cancel the registration. If the declaration is accepted in respect of fewer than all of the goods and/or services stated in the registration, the registration shall be limited by the Commissioner to those of the particular goods specified in the declaration in connection with which the mark is still in use in commerce.

(3) Upon a satisfactory showing by the registrant that his nonuse of the mark in commerce is due to special circumstances which excuse such nonuse and is not

due to any intention to abandon the mark, the Commissioner may extend the time for filing the declaration under this section.

(4) The Commissioner shall notify the registrant who files the above prescribed declaration of his acceptance or refusal thereof and, if a refusal, the reasons therefor."

Sec. 8(a) Section 10 of such Act is amended by inserting, preceding the first sentence of such section, "(a)(1)", by striking out "(d)" in the last sentence and inserting in lieu thereof "(e)", and by adding at the end of such section the following new paragraphs:

"(2) A change in the ownership of a registration or application for registration under this Act may be recorded in the Patent and Trademark Office in such form as may be prescribed by the Commissioner, or, in the case of an application filed or registration issued pursuant to section 1(b)(2), or renewed pursuant to section 9(b)(2), by recording the change in Ownership, in respect of the United States, of the international registration on the basis of which such application was filed or such registration was issued. The recording by the International Bureau of a change in the Ownership, in respect of the United States, of an international registration shall, if valid, have the same effect as if such change had been entered in the records of the Patent and Trademark Office on the same date as the date of such international recording.

"(3) The recording of a change in ownership pursuant to paragraph (2) which is the result of an assignment of the registered or applied for mark shall, as of the date of such recording, be accorded the same effects as those which are accorded to the recording of such assignment: *Provided,* That within three months from the date of notice of such recording, mailed to the person who applied therefor, or, where the recording is effected by the International Bureau, from the date of publication of such international recording, instruments of assignment conforming to the requirements of paragraph (1) have been recorded in the Patent and Trademark Office.

"(4) Any person, not entitled to file international applications, who has, nevertheless, become the owner of an application filed or registration issued pursuant to section 1(b)(2), or renewed pursuant to section 9(b)(2), other than as a result of a contract between him and the previous applicant or registrant, may file an application for registration of the same mark under section 1(b)(1). If the application under section 1(b)(1) is filed by such person in the Patent and Trademark Office within two years from the said change in ownership and prior to six months after the expiration of the initial term, or of the then running term of renewal, of the international registration on which such application or registration is based, it shall, in respect of those of the goods and/or services which are the same, be treated as if it had been filed on the same date as the date on which the designation of the United States in such corresponding international registration took effect: *Provided,* That such application under section 1(b)(1) conforms to all of the requirements of this Act."

(b) Section 10 of such Act is amended by adding the following subsections:

"(b) Instruments evidencing changes in the name of the applicant or registrant may be recorded in the Patent and Trademark Office, in such form as may be prescribed by the Commissioner, or, in the case of a registration issued on the basis of an application filed under section 1(b)(2), or renewed pursuant to section 9(b)(2), by recording the change in the name of the Owner of the international registration on the basis of which such registration was issued. The recording by the International Bureau of a change in the name of the Owner of an international registration, in which the United States is a designated State, shall, if valid, have the same effect as if it had been entered in the records of the Patent and Trademark Office on the same date as the date of such recording.

"(c) Where at any time, as a result of a final decision in any proceeding under this Act, it is determined that a recording made under this section is void or that such recording was made contrary to the requirements of the Act, the Commissioner shall, upon request of any interested party, cause an appropriate correction to be entered in the records of the Patent and Trademark Office. If such recording was effected on the basis of a recording in respect of an international registration, the Commissioner shall, if appropriate, deny the effect of such international recording and notify the International Bureau accordingly, as prescribed in the Trademark Registration Treaty."

Sec. 9 Section 12(a) of such Act is amended to read as follows:

"Upon the filing of an application for registration, the Commissioner shall refer the application to the examiner in charge of the registration of marks, who shall cause an examination to be made. Unless the application has been previously withdrawn or abandoned, the mark shall be published in the OFFICIAL GAZETTE of the Patent and Trademark Office at such time as the Commissioner shall prescribe, not later than 12 months, counted from the filing date of the application. In the case of an applicant claiming concurrent use, or in the case of an application to be placed in an interference as provided for in section 16 of this Act, the mark may be published subject to the determination of the rights of the parties to such proceedings."

Sec. 10 Section 12(b) of such Act is amended by striking out "6" in two places and inserting, in lieu thereof "3" and by adding at the end thereof:

"Except for the failure of an applicant to comply with the requirements of section 1(c), no mark shall be refused registration for a reason which has not been indicated in a communication given or mailed to the applicant on or prior to 12 months, counted from the filing date: *Provided,* That this limitation shall not apply to any refusal determined by the Trademark Trial and Appeal Board or by a court."

Sec. 11 The second sentence of section 13 of such Act is amended by changing the period at the end of this sentence to a colon and adding a proviso and a new third sentence reading as follows:

"*Provided,* That such time shall in no event be extended to a date which is later than 14 months, counted from the filing date of the application for registration in respect of which the extension of time for filing opposition is requested. An opposition may be filed by a duly authorized attorney of the opposer."

Sec. 12 Section 14 of such Act is amended by inserting, following "person" the words, "or by a duly authorized attorney of any person"; by inserting, following "date" in clause (a), the words "of issue", and by inserting, following "thereunder" , in clause (c), the following words:

"or, in the case of a registration issued on the basis of an application under section 1(b)(2), or renewed pursuant to section 9(b)(2), on the ground that the registrant was not entitled to own international registrations,".

Sec. 13 The first sentence of section 15 of such Act is amended by inserting, following the third occurrence of "date", the words "of issue".

Sec. 14 The first sentence of section 16 of such Act is amended by inserting, following "may" the words, "prior to the publication under section 12(a) of such mark,".

Sec. 15 Section 17 of such Act is amended by inserting, between the first and second sentences thereof:

"Where an interference, opposition to registration or concurrent user proceeding concerns an application

for registration under this Act of a mark, the entitlement to registration of which has not been finally determined by the examiner in charge of the registration of marks or, as a result of an appeal from a final refusal of the examiner, by the Trademark Trial and Appeal Board or a court, the Commissioner may, with notice to all parties, defer the commencement of such proceeding until such final determination has been made."

Sec. 16 The first sentence of paragraph (1) of section 21(a) of such Act is amended by inserting, following "affidavit", the words "or declaration"; and by striking out "section 8" and inserting in lieu thereof "section 8. 1(c). or 9(c)".

Sec. 17 Section 22 of such Act is amended by inserting, at the beginning of the sentence, "Issuance of a" and by changing the "R" in "Registration" to "r".

Sec. 18 Section 23 of such Act is amended by inserting, following "commerce" in the second sentence of such section, "or are intended to be used in commerce,"; by striking out in the second sentence of such section "for the year preceding the filing of the application"; by inserting between the second and third sentences of such section: "An application for the registration of a mark shall be treated as an application under this section only if the application or, in the case of an application pursuant to section 1(b)(2), if the international registration or recording of later designation which is the basis for such application, contains an indication to this effect."; and by striking out in its entirety the last sentence of such section.

Sec. 19(a) The second sentence of section 24 of such Act is amended by inserting, preceding "may," the words, "or his duly authorized attorney," and by striking out the word "verified".

(b) The fourth sentence of section 24 of such Act is amended by inserting, following "used", the words, "following the date of expiration of the period referred to in section 1(c)(1),".

Sec. 20 The second sentence of section 30 of such Act is amended to read as follows:

"When the goods and/or services specified in an application fall within a plurality of classes, a fee equalling the sum of the fees for filing an application in each class shall be paid, and the Commissioner may issue a single certificate of registration for such mark."

Sec. 21(a) Subsection (a) of section 31 of such Act is amended by striking out paragraph (3) of such subsection, by appropriately renumbering the remaining paragraphs; and by inserting, following "mark" in newly renumbered clause (6) (old paragraph (7)), "change in the name of the registrant,".

(b) Section 31 of such Act is amended by adding, after subsection 31(c), the following new subsection:

"(d) The fees specified in paragraphs (1) and (2) of subsection (a) shall, in the case of applications pursuant to section 1(b)(2) and renewals pursuant to section 9(b)(2), be deemed to be substituted for, respectively, by the individual State fees and the individual State renewal fees applicable to designations of and renewals concerning the United States pursuant to the Trademark Registration Treaty. The Commissioner shall communicate to the International Bureau the amounts of such individual State fee and individual State renewal fee and such amounts shall be the same, respectively, as the amounts of the fees specified in paragraphs (1) and (2) of subsection (a)."

Sec. 22 Section 32(1) of such Act is amended by adding at the end of such section the following sentence:

"No action under this section may be started by the registrant of a registration issued under this Act until the declaration under section 1(c) in respect of the mark which is the subject of such registration has been filed in the Patent and Trademark Office and accepted by the Commissioner."

Sec. 23(a) Section 33(a) of such Act is amended by inserting following "registration" (second occurrence), the words, "and in respect of which the mark is stated to be in use in commerce in the registration, or in the declaration under section 1(c) which has been filed in the Patent and Trademark Office and accepted by the Commissioner,"

(b) Paragraph (5) of section 33(b) of such Act is amended by inserting, preceding "registration" the words "the date of issue of the".

(c) Section 33 of such Act is amended by adding, after subsection 33(b), a new subsection reading as follows:

"(c) For the purpose of determining priority of rights in any proceeding under this Act, an application for registration of a mark which has not been withdrawn or abandoned or a registration issued on the basis of such application, shall, from and after its filing date, be accorded the same effect as if the applicant, or the registrant, had commenced use of the mark in commerce on the said filing date, without derogation, however, of any earlier priority based on use of the mark commenced earlier than the said filing date or of any right of priority to which the applicant of registrant may be entitled pursuant to second 44(d) of this Act."

Sec. 24 Section 35 of such Act is amended by adding at the end of such section the following sentence:

"Any remedy under this section shall relate only to the period after the registrant commenced the continuing use of the mark in commerce."

Sec. 25 Section 44(a) of such Act is amended by inserting, preceding the first sentence of such subsection, "(1)" and by adding, at the end thereof, the following new paragraphs:

"(2) The Commissioner shall keep a register of international registrations designating the United States which have been published and notified to the Patent and Trademark Office in conformity with the Trademark Registration Treaty, including renewals thereof and recordings related thereto, and shall be authorized to accord and refuse effects, communicate notifications, make attestations, decide petitions, determine the amounts of and receive payments of fees, and perform all other acts prescribed by the said Treaty, subject to the requirements thereof.

"(3) Where the time limit for a notification to the International Bureau prescribed by the Trademark Registration Treaty is stated in terms of the date of receipt of such notification by the International Bureau, such notification shall be transmitted by Registered Mail no later than 14 days prior to the expiration of the time limit and, except where an agency of the said Bureau, established pursuant to the said Treaty, is operating within the United States, shall be transmitted to that bureau via Air Mail.

"(4) A mark subject of an application under section 1(b)(2) in respect of which no notification of refusal or possible refusal was received by the International Bureau within the time limit fixed in Article 12(2)(a)(i) of the Trademark Registration Treaty shall be automatically entitled to registration under this Act on the same register as the one for which such application was made. Upon request by the applicant of such an application and unless the registration has been previously issued, the Commissioner shall issue the registration to which such applicant is entitled under this paragraph and the date of issue of such registration shall be the date of the OFFICIAL GAZETTE next preceding the date of expiration of the said time limit. Registration of a mark under the provisions of this paragraph shall be without prejudice to the right of any person to petition to cancel such registration under section 14 of this Act for any reason, including one which was referred to in a refusal made pursuant to section 12(b) or in an opposition filed pursuant to section 13, the notification of which was not received

by the International Bureau or which was not received by such Bureau within the said time limit. If a registration is issued pursuant to this paragraph in respect of a mark, the registration of which had been opposed in a timely filed opposition, the Commissioner shall notify the opposer in such opposition and shall, upon request of such opposer received within 30 days from the date of such notice, direct the Trademark Trial and Appeal Board to determine and decide the rights of registration as if the opposition to registration had been filed as an application to cancel the said registration on the date of issue of such registration.

"(5) Failure by the applicant of an international application or by the Owner of an international registration to act within prescribed time limits in connection with requirements pertaining to an international application, international registration or later designation designating the United States, or to any recording related thereto, may be excused upon a showing satisfactory to the Commissioner of unavoidable delay, to the extent not precluded by the Trademark Registration Treaty or by this Act."

Sec. 26 Section 44(c) of such Act is amended by striking out the first sentence of such section; and by striking out the heading, preceding the second sentence, "Country of origin defined."

Sec. 27 Section 44(d) of such Act is amended to read as follows:

"An application for registration of a mark under sections 1, 2, 3, 4 or 23 of this Act filed by a person described in paragraph (b) of this section who has previously duly filed an application for registration of the same mark in one of the countries described in paragraph (b), or a regular international application in respect of the same mark designating at least one country other than the United States, shall be accorded the same force and effect as would be accorded to the same application if filed under this Act on the same date on which such application was first filed in such foreign country, or on which such international application was first filed with the International Bureau: *Provided,* That—

(1) The application under this Act is filed within 6 months from the date on which the application was first filed in the foreign country or on which the international application was first filed with the International Bureau;

(2) The rights acquired by third parties before the date of the filing of the first application in the foreign country or of the first international application shall in no way be affected by a registration obtained on an application filed under this subsection (d);

(3) Nothing in this subsection (d) shall entitle the owner of a registration granted under this section to sue for acts committed prior to the date on which such registrant has commenced the continuing use of the mark in commerce.

In like manner and subject to the same conditions and requirements, the right provided in this section may be based upon a subsequent regularly filed foreign application or subsequent regular international application, instead of the first filed foreign application: *Provided,* That any foreign application or international application filed prior to such subsequent application or international application has been withdrawn, abandoned, or otherwise disposed of, without having been laid open to public inspection and without leaving any rights outstanding, and has not served, nor thereafter shall serve, as a basis for claiming a right of priority."

Sec. 28(a) The paragraphs headed "Trademark," "Service Mark," "Certification Mark," "Collective Mark" and "Intent of Act" in section 45 of such Act are amended by inserting, following each occurrence of "used", the words "or intended to be used".

(b) Clause (a) of the paragraph in section 45 of such Act headed "Abandonment of Mark" is amended to read as follows:

"(a) when its use has not commenced and there is no intent to commence use or when its use has been discontinued with intent not to resume. Lack of intent to commence or intent not to resume may be inferred from the circumstances. If use of a mark has been discontinued, its nonuse for two consecutive years shall be prima facie abandonment."

(c) Section 45 of such Act is amended by adding the following paragraphs:

"Filing date. The filing date of an application for registration under section 1(b)(1) shall be the date on which all of the elements prescribed by the Commissioner as minimum elements for according a filing date have been received in the Patent and Trademark Office. The filing date of an application for registration under section 1(b)(2) shall be the same date as the international registration date of the international registration or, if applicable, the recording date of the later designation, on the basis of which such application is filed."

"Date of issue. The date of issue of a registration under this Act is the date of the issue of OFFICIAL GAZETTE of the Patent and Trademark Office in which the notice concerning the issuance of the registration appears."

"Trademark Registration Treaty. The term "Trademark Registration Treaty" means the Treaty so entitled, done at Vienna, Austria, on June 12, 1973, including the Regulations under the said Treaty."

"International application, international registration, request for the recording of later designation, recording of later designation, International Bureau, regular international application, individual State fee, individual State renewal fee. The terms "international application", "international registration", "request for the recording of later designation", "recording of later designation", "International Bureau", "regular international application", "individual State fee" and "individual State renewal fee" are to be taken in the sense indicated by the Trademark Registration Treaty."

"Owner, Ownership. The terms "Owner" and "Ownership" are to be taken in the sense indicated by the Trademark Registration Treaty where they appear in this Act in capitalized form."

"Owner of a trademark. The term "owner of a trademark" means a person who is using, or who has an intention to use, a trademark in commerce: *Provided,* That no other person, except a lawful concurrent user, has the right to use, and is using or has previously declared, in an application filed under this Act which has not been withdrawn or abandoned, his intention to use, such mark in commerce either in the identical form thereof or in such near resemblance thereto as to be likely, when applied to the goods of such other person, to cause confusion, or to cause mistake, or to deceive."

Sec. 29(a) This Act shall come into force on the same date as the entry into force of the Trademark Registration Treaty with respect to the United States. It shall apply to applications for registration of marks filed in the Patent and Trademark Office on or after such date, even though entitled to an earlier effective filing date, and to registrations issued on the basis of such applications; to international applications and later designations designating the United States filed with the International Bureau on or after such date, even though entitled to an earlier effective filing date, and to international registrations accorded effects in the United States on the basis of such international applications and later designations; and to proceedings under the Trademark Act of 1946, as amended, commenced on or after such date.

(b) Except as otherwise hereafter provided, applications for registration of marks on file in the Patent and Trademark Office on the date this Act comes into force, registrations issued on the basis of such applications, and proceedings under the Trademark Act of 1946, as amended, which are pending on such date, shall be governed by the provisions of the Trademark Act of 1946, as amended, in effect immediately prior to such date.

(c) Except as otherwise provided hereafter in this section, all registrations under the Trademark Act of 1946, as amended, or under the previous Acts specified in section 46(b) of such Act, existing on the date this Act comes into force shall be governed by the Trademark Act of 1946, as amended, in effect immediately prior to such date.

(d) The provisions of section 9 of the Trademark Act of 1946, as amended, as amended by this Act, shall apply to all registrations under such Act and under the previous Acts specified in section 46(b), whether issued or applied for before, on, or after the date this Act comes into force: *Provided,* that the amendments to such section by this Act shall not apply to the renewal of any registration for any period which started on a date which is earlier than six months after such date.

(e) The amendment by this Act, of the Trademark Act of 1946, as amended, shall not affect any rights or liabilities existing under such Act in effect immediately prior to the date this Act comes into force.

SECTIONAL ANALYSIS

Section 1 of the bill amends section 1 of the Trademark Act of 1946, as amended (hereinafter referred to as Trademark Act)[1] in a number of respects. The preamble makes it clear that the commerce clause as well as the treaty power is invoked to support the amendments. Section 1 of the amended Trademark Act is divided into five subsections, each of which is separately discussed below:

Section 1(a) *Entitlement to registration of a trademark.* Entitlement to registration is changed from present law in one fundamental respect. This is that intention to use, as well as actual use of, a trademark is a valid basis for ownership and registration. The other conditions are essentially the same as under present law.

The applicant must be a "person", as defined in section 45. The definition of "person" has not been changed.

As under the present statute, the applicant must be the "owner" of the trademark sought to be registered. The concept of ownership is modified as necessary to be consistent with the new alternative basis of rights. Also, rather than being part of the verified statement, the definition of "owner of a trademark" is in section 45.

The term "owner" is defined, as under present law, in respect of the absence of a superior right in any other person. What is new is that a claim of ownership is defeated not only by the superior right of a prior *user* of the same of a similar mark but also by the superior right of one who has a prior *intention to use* such a mark. However, the latter right can defeat the claim of ownership *only* it the intention to use has been previously declared in an application filed under the Act which has not been withdrawn or abandoned. Accordingly, while a person acquires (absent a superior right) an ownership right by reason of his intention to use a trademark, the right in that case is inchoate and is accorded no protection under the statute and no priority until it has been fixed in an application filed under the Act in which the intention to use is declared. Thus, filing the application is critical to a claim of ownership by intention to use and except, of course, where the Paris Convention "right of priority" (i.e. section 44(d)) is invoked, the filing date is the earliest date on which such a person can rely in a priority contest. (See Section 23(c)).

Finally, the use or intended use must be in commerce. The definition of "commerce" is not changed. The outside parameters of "intended use in commerce" are left to interpretation just as has been the case with "use in commerce" under the present statute, and the principles that would be applied in such interpretation are essentially the same.

Section 1(b) *Procedure for applying to register a trademark.* Under the amended Act, there are two basic procedures for securing the registration of a trademark, i.e. by filing an application in the Patent and Trademark Office (section 1(b)(1)) and by designating the United States in an international registration pursuant to the Trademark Registration Treaty[2] (section 1(b)(2)). Except for the place where the application is filed and the fee is paid, the substantive requirements applicable to the alternative procedures are essentially the same.

Section 1(b)(1) *Domestic procedure.* In order to achieve harmonization of domestic and international procedures, the following changes are made in the national application procedures.

1. The application may be signed by a representative, duly appointed by the applicant, as an alternative to signing by the applicant himself. The same benefit is provided to applicants filing under the Trademark Registration Treaty (Article 26).

2. Consistent with the requirements of the Trademark Registration Treaty and modern practice in regard to the filing of statements with federal agencies the verification of ownership requirement has been eliminated.

Of course, the criminal provisions of 18 U.S.C. 1001 would remain applicable to a statement made in a trademark application irrespective of whether such statement is verified.

3. The applicant need not allege use of the mark in his application. The Trademark Registration Treaty prohibits such a requirement (Article 19(3)(a)) for the owners of international registrations; consequently, the same benefit is accorded to persons filing regular national applications. Substituted for this requirement is the declaration of intention to use the mark in commerce, which *is* permitted by the Treaty (Article 19(4)). Consistent with this change, specimens or facsimiles of the mark as actually used need not be submitted with the application.

It should be noted that required allegations and exhibits relating to actual use according to the present statute are retained in section 1(c). It should also be noted here that the applicant *may* file the section 1(c) declaration together with his application (section 1(c)(2)), if the mark is already in use in commerce. In such case, the declaration of intention to use is obviously superfluous and need not be made.

Section 1(b)(2) *International procedure.*

This paragraph states the requirements which must be satisfied in order to secure the effect of a United States application, i.e. the effect required by the Trademark Registration Treaty (Article 11(1)).

The provisions of Article 19(4) of the Treaty, requiring a declaration of intention to use, are also implemented, corresponding to the same requirement in section 1(b)(1)(C) for domestic applicants.

Finally, a special requirement as to entitlement of a foreign applicant to use the Trademark Registration Treaty (Article 4) has been added since the International Bureau will only examine this question formally, leaving it to the designated States to examine it as to substance. Thus, non-entitlement of a foreign applicant to use the Treaty procedure is a ground for refusal (Article 12(1)(ii)) or cancellation (Article 13(1)(ii)) in addition to the grounds applicable under the national law.

The final two sections of section 1(b) implement part of Article 9 of the Treaty whereunder the improper declining of an international application or later designation request by the International Bureau can be rectified by filing a regular domestic application within 2 months

from the notice of the declining.

Section 1(c) *Declaration of use.*

Section 1(c) calls for a declaration of use showing that use of the mark commenced on or prior to the date of expiration of three years, counted from the filing date.

Paragraph (1) requires the declaration to contain essentially the same information as that required by present section 1.

Paragraph (2) prescribes a time limit of four years, counted from the filing date, within which the declaration may be filed, and indicates the consequences of failure to file an acceptable declaration.

Paragraph (3) authorizes the Commissioner to require the earlier filing of a declaration when important relative to an issue in any Office proceeding, provided that the three-year period has expired.

Paragraph (4) prevents abuse of the intention to use provisions by a person filing successive applications for the same, or a substantially equivalent, mark by providing that, unless there is a gap of at least two years between the expiration of the nonuse moratorium of the earlier case and the date of filing of the later case, the three-year period in the later case is measured from the filing date of the earlier case. Any subsequent application which is accompanied by a declaration of use is excluded from the special provisions.

Paragraph (5) provides for an extension of the time limits when due to extraordinary circumstances nonuse is excusable. The proviso expressly states, however, that the mere pendency of the application for registration as of the expiration of the three-year period shall not justify an extension, making it clear that Article 19(3)(b) of the Trademark Registration Treaty does not apply in the United States.

Paragraph (6) requires the Commissioner to give notice regarding acceptance or refusal of a declaration.

Section 1(d) *Special requirement for concurrent use applications.*

This provision, unchanged from present law, is placed in a separate subsection because its applicability is limited to applications wherein the section 1(c) declaration of use has been filed.

Section 1(e) *Special requirement for applicants not domiciled in United States.*

This subsection requires all applicants not domiciled in the United States to designate an agent for service on or prior to the institution or defense of a proceeding under this Act. Before a local agent for service has been designated, service may be made upon the Commissioner.

Sections 2 and 3 of the bill amend sections 3 and 4 of the Trademark Act so that service marks and collective and certification marks may be registered based on either use or intention to use.

Section 4 of the bill amends section 5 of the Trademark Act to provide that the intended use by a related company inures to the benefit of the registrant or applicant.

Section 5(a) of the bill amends section 7(a) of the Trademark Act to take into account the fact that registrations issued on the basis of intent applications would not, if the declaration of use has not been filed, contain any data concerning use of the mark. In such cases, the fact that the declaration has not been filed would be indicated in the registration in lieu of the indications as to use. Also, the term "date of the registration" has been deleted, the significant dates under the amended statute being the "filing date" and the "date of issue."

Section 5(b) amends section 7(a) by requiring a notice of registration to be published in the OFFICIAL GAZETTE in support of the definition of "date of issue" in section 45.

Section 5(c) amends section 7(b) of the Trademark Act by deleting the presumption of the registrant's exclusive right to use the registered mark in commerce on the goods specified in the registration. One reason is that this presumption in the present statute is repeated in section 33(a).

The other reason is that this presumption, as it pertains to infringement actions, must be limited to be consistent with the limitation on the right even to file an infringement action prior to the commencement of use (see Section 23(a)).

Deletion of the "exclusive right to use" presumption from section 7(b) leaves a gap in the statute, however, the bringing of Patent and Trademark Office proceedings, i.e. oppositions and cancellations is not subject to the above mentioned limitation. The exclusive right to use presumption has served in such proceedings as the basis of the ruling that a registrant is entitled to rely solely upon his registration on the principal register as prima facie evidence of his right to exclude any other person from securing a registration under the Act of a confusing mark. Therefore, a presumption as to this right has been added.

Section 5(d) of the bill amends section 7(d) by adding two new paragraphs which provided domestic and international procedures, consistent with present law and with the Treaty, for amending a registration in respect of the specification of goods and/or services.

Section 5(e) of the bill amends section 7 by adding a new subsection, section 7(h), providing for appropriate notification, consistent with Article 20 of the Treaty, with respect to entries concerning registration based on international registrations.

Section 6 of the bill amends section 8(a) of the Trademark Act by changing the term of a registration from 20 to 10 years and the date from which the terms is measured from the registration date to the filing date. These changes correspond the term of domestic registrations to that of registrations secured under the Trademark Registration Treaty. The shorter term also facilitates the clearing from the register of unused marks.

The section is also amended to require that the use declared in the affidavit or declaration set forth in the proviso, i.e. the present section 8 affidavit, be use "in commerce".

Finally, the section is amended to permit, consistent with the requirement in the Treaty (Article 19(3)(d)), that such affidavit or declaration requirements be capable of being fulfilled in the case of an international registration by filing with the International Bureau.

Section 7 of the bill amends section 9 of the Trademark Act to set forth domestic and international procedures for renewal and to provide equivalent treatment, as to substantive requirements, of international and domestic registrants. Thus, as in the case of an application for registration, the renewal application may be signed by a representative, duly appointed by the registrant.

Two changes are made in the statute which conform to the Treaty, as follows:

1. The term of renewal is 10 years rather than 20, consistent with the Treaty (Article 17).
2. The time period, counted from the expiration date of the expiring term, in which a late renewal application can be filed is increased from three months to six months, corresponding to Article 17(3)(a).

Section 9(c) requires a declaration of use which requirement is applicable to all renewed registrations. Other than the three additional months in which to declare use of the mark, the only difference from present law is that the consequence of failure to satisfy the requirement is cancellation of the registration rather than refusal to renew.

Section 8(a) of the bill amends section 10 of the Trademark Act in several minor respects. Except for a technical change, the present provision for recording of assignments (section 10) is not changed.

Three new paragraphs have been added to the assignment section. The first two of these (i.e. 10(a)(2) and 10(a)(3)) implement Article 14 of the Treaty, under

which a change in the ownership of an international registration may be recorded, by adding equivalent procedures to the national law. Thus, any applicant or registrant may record the fact that a new person has become the owner of an application filed or registration issued under the Act by complying with certain basic formalities. Paragraph (3) provides that if this step is taken within the period specified in paragraph (1) and it is followed up by the recording of instruments of assignment conforming to the requirements of paragraph (1), the constructive notice effect of recording an assignment in the Office will accrue.

The third additional paragraph (i.e. 10(a)(4)) is a special provision, implementing Article 14(5), for the benefit of one who, although not entitled to file under the Treaty, becomes the owner of an international registration by operation of law (e.g. by inheritance). Such a person may, subject to special requirements, rectify this defect by filing a regular national application.

Section 8(b) of the bill amends section 10 of the Trademark Act by adding two new provisions. The first of these (Section 10(b)) adds a new procedure, consistent with Article 15 of the Treaty, for recording a change in the name of the registrant.

Subsection (c) is added to clarify the procedure where a recording is void. Recordings under subsections (a) and (b) may later be determined to be void or contrary to law in another proceedmg (cancellation, infringement action, etc.) under the Act. A specific provision has been added to clarify the fact that the Commissioner has the authority to correct the records and to provide a basis for denial of any international recording which formed the basis of the national entry.

Section 9 of the bill amends section 12(a) of the Trademark Act to provide for a "cut off" in the length of the ex parte examination of twelve months counted from the filing date of the application. Under amended section 12(a) all applications, the examination of which has not been completed, would have to be published for opposition purposes no later than 12 months from the filing date.

The reason for 12 months as the "cut off" is that the time required to effect publiction, to receive oppositions (including delays in processing oppositions received on the last day), and to communicate, in the case of international registrations, all grounds of refusal or possible refusal to the International Bureau, must be taken into account in order to meet the deadlines prescribed by the Treaty (see Article 12).

It should be noted that the exact schedule for publication is left to determination by the Commissioner. There are, at least, two possibilities: (1) publication, promptly after filing, of all applications; and (2) publication (of allowed cases) after completion of the ex parte examination (as at present), or (of all still pending cases) at the expiration of 12 months, whichever event is the earlier to occur.

Section 10 of the bill amends section 12(b) of the Trademark Act by reducing the period of time in which to reply to an Office communication concerning the application from six to three months and by providing a time limitation applicable to notifying the applicant of grounds raised during the ex parte examination. The reduction of response time should make it possible for the Office to complete the ex parte examinaion of most applications within the 12 months period of amended section 12(a).

The cut off is the same as the one in amended section 12(a), i.e. 12 months, counted from the filing date. The examination need not be completed within the 12 months as the Treaty requirement is only that all grounds be communicated within that period. Also, the limitation would not apply to a new ground of refusal based on a decision of the Trademark Trail and Appeal Board or of a court.

Section 11 of the bill amends section 13 of the Trademark Act by providing for a time limit of 14 months for receiving oppositions. The 14 month time limitation ties in with the amendment to section 12(a) of the Act, providing equivalence of treatment of domestic and Treaty applicants. Section 13 is also amended to provide that an attorney may file an opposition on behalf of the opposer.

Section 12 of the bill amends section 14 of the Trademark Act in two respects, conforming this section to amended section 13, and a minor change in terminology ("date of issue").

Section 13 of the bill amends section 15 of the Trademark Act by a minor change in terminology ("date of issue").

Section 14 of the bill amends section 16 of the Trademark Act by providing specifically that an interference may be declared as to any particular application for registration of a mark only prior to the publication for opposition of that mark. While this is no different than current practice, the change in the statute seemed desirable. Since the declaration of an interference would constitute a ground of possible refusal under the Trademark Registration Treaty, such ground would have to be notified to the International Bureau within the prescribed time limit. By requiring the declaration of the interferences prior to the date of publication, the section is subject to the same time limitation as in amended section 12(a), i.e. 12 months from the filing date.

Section 15 of the bill amends section 17 of the Trademark Act by providing discretionary authority to the Commissioner to defer the commencement of certain inter partes proceedings where the ex parte examination of a concerned application is not complete.

Section 16 of the bill amends section 21 of the Trademark Act by providing for an appeal from a refusal to accept a declaration pursuant to sections 1(c) and 9(c), as is now provided in the case of refusal of a section 8 affidavit.

Section 17 of the bill makes a language change in section 22 of the Trademark Act, consistent with the change from "date of registration" to "date of issue". Thus, constructive notice begins with publications of issuance of the registration (date of issue), no different in substance than under present law.

Section 18 of the bill amends section 23 of the Trademark Act by eliminating the requirements and provisions relating to use in the first and fourth paragraphs. Also, provision is made for treatment of applications as being under this section only where the application or the international registration (or recording of later designation) so indicates. The specific reference implements Article 11(3) which requires this treatment in the case of international registrations.

Section 19(a) of the bill amends section 24 of the Trademark Act by deleting the requirement that a petition to cancel a registration on the Supplemental Register be verified (consistent with amended section 14).

Section 19(b) of the bill amends section 24 of the Trademark Act by limiting the authority to cancel a registration on the Supplemental Register for nonuse, consistent with the use moratorium of the Treaty.

Section 20 of the bill amends section 30 of the Trademark Act in minor respects to remove an incidental reference to use of a mark that is inconsistent with amended section 1.

Section 21(a) of the bill amends section 31 of the Trademark Act by deleting the requirement of a fee for the filing of a section 8 affidavit. Since a section 8 fee cannot be assessed against a registration issued on the basis of an international registration (Article 19(1)), it is deleted in order to provide equivalence between domestic and Treaty applicants as to fees payable to the United States.

Section 21(b) of the bill amends section 31 of the Trademark Act by adding new subsection (d) whereby the filing and renewal fees are deemed to be substituted for by the corresponding fees set forth in the Treaty, where the

international procedure is followed. This provision also obligates the Commissioner to fix the Treaty fees at the same amounts as the national fees.

Section 22 of the bill amends section 32(1) of the Trademark Act by providing that no infringement action may be started under the Act until the declaration of use of the mark in commerce has been filed in the Patent and Trademark Office and accepted by the Commissioner. This change implements the last sentence of Article 19(3)(a). Examination of the declaration could be accelerated if the registrant faced an impending infringement situation.

Section 23(a) of the bill amends section 33(a) of the Trademark Act so that the presumption of exclusive right to use the mark would apply as a rule of evidence only as to those goods and/or services in respect of which the mark is stated to be in use in commerce either in the registration itself or in the declaration under section 1(c).

Section 23(b) makes some minor changes in the language of section 33(b).

Section 23(c) amends section 33 of the Trademark Act by adding a new subsection (c) to define priority of rights accorded to applications or registrations based on an intention to use the mark. Under new subsection (c), the priority of an intent applicant or registrant would be *the same as if* he had commenced use of the mark in commerce on the filing date, unless, of course, he had an earlier priority based on use or based on the Paris Convention priority provisions of section 44(d) of the Act.

Section 24 of the bill amends section 35 of the Trademark Act in order to implement the last sentence of Article 19(3)(a) so that the remedies of profits and damages cannot date back prior to the date of commencement of use.

Section 25 of the bill renumbers present section 44(a) of the Trademark Act as section 44(a)(1) and adds to it some special provisions relating to the Trademark Registration Treaty.

Paragraph (2) authorizes the Commissioner to keep a register of international registrations designating the United States.

Paragraph (2) also contains a broad implementing provision, authorizing the Commissioner to take various actions prescribed by the Treaty. While all of the essential Treaty provisions parallel to provisions concerning domestic applications and registrations have been specifically implemented, a large number of Treaty provisions remain which solely concern the international procedures.

Paragraph (3) prescribes a precedure for communicating notifications where the deadline is stated in terms of the date of receipt by the International Bureau, most importantly the notification of refusal or possible refusal under Article 12(2)(a)(i).

Paragraph (4) implements Article 11(2)(i) of the Treaty providing for automatic registration as of the date of expiration of the time limit fixed in Article 12(2)(a)(i) where no notification of refusal or possible refusal has been received by the International Bureau.

Pargraph (5) implements Article 29 of the Treaty whereby certain delays in meeting the time limits fixed in the Treaty must be waived and others may be waived. There are some specific exceptions in the Treaty which is the reason for the last clause in this pargraph.

Section 26 of the bill amends section 44(c) of the Trademark Act by deleting the first sentence of this subsection. Since a person can secure a registration based on an intention to use the mark in commerce, the sentence is inconsistent with the amended Act. However, the sentence is no longer necessary. Under the amended Act all applicants would be required to declare use or an intention to use in commerce, whether or not the mark is also registered in the country of origin.

Section 27 of the bill deletes present subsection 44(d) of the Trademark Act and substitutes therefor a subsection providing that a right of priority may be based on a first international application as well as a first national application. Paragraph (2) of present subsection (d) is not continued. Waiver of use in commerce is no longer necessary since an application need not allege use under the amended Act. Old pargraph (4) (new paragraph (3)) of the subsection is amended to be consistent with the first sentence of section 44(c).

Section 28(a) of the bill amends the definitions, in section 45 of the Trademark Act, of the terms "trademark," "service mark," "certification mark," "collective mark" and "Intent of Act" by adding the phrase, "or intended to be used" in appropriate places consistent with the new basis for securing registrations.

Section 28(b) of the bill amends the definition, in section 45 of the Trademark Act, of "abandonment" to provide for abandonment of a mark applied for based on an intention to use where no use is commenced and there was never any intention to commence use. The two year prima facie abanodnment provision is amended to make it clear that it applies only where use of a mark is discontinued.

Section 28(c) of the bill amends section 45 of the Trademark Act by adding the following new definitions:

(1) "Filing date" is defined because of its significance in respect of priority of rights in the case of an application or registration based on the intention to use;
(2) "Date of issue" is defined;
(3) "Trademark Registration Treaty" is defined;
(4) Various terms used in respect of the Trademark Registration Treaty are referenced to the Trademark Registration Treaty definitions;
(5) The terms "Owner" and "Ownership," used in capitalized form are referenced to the Trademark Registration Treaty.

This was done in order to distinguish these references from other references in the statute to "owner" or "ownership" which refer to the owner, or ownership, of a mark.

Finally, the term "owner of a trademark" is defined. The reason for this definition is discussed under Section 1, infra.

Section 29 of the bill prescribes the implementation of the various changes effected by the bill. The effective date of the Act coincides with the entry into force of the Treaty with respect to the United States. Appropriate provisions specify the controlling law which is applicable before, or on or after, the effective date.

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(122) Trademark Applications Under Section 44 of the Trademark Act of 1946

[37 CFR Parts 2 and 4]

Withdrawal of Proposed Rules

Agency: Patent and Trademark Office, Commerce.
Action: Withdrawal of proposed rules.

Summary: The Patent and Trademark Office hereby withdraws its rule proposals (FR Doc. 77-23095 published in the Federal Register on Aug. 10, 1977, 42 FR-40450; 962 TMOG 2–4, Sept. 6, 1977) regarding applications filed under section 44 of the Trademark Act of 1946.

Under the proposed rules, foreign applicants filing under section 44 (d) or (e) of the Trademark Act of 1946, as amended, 15 U.S.C. 1126, would no longer have been required to allege use of the mark somewhere or to submit specimens of facsimiles demonstrating such use.

The primary consideration for the withdrawal of this rules proposal was the strong objection voiced by several commenters that the proposed rule changes would have placed some United States nationals in a less favorable position than foreign nationals than is the case under the present rules.

Effective Date: June 30, 1978.

For Further Information Contact: J. Paul Williamson, Patent and Trademark Office, 703-557-2521.

Supplementary Information: A notice was published in the OFFICIAL GAZETTE of the United States Patent and Trademark Office on Apr. 30, 1974 (921 OG TM 250) detailing the procedure being followed by the Office in connection with applications filed under section 44 of the Trademark Act of 1946 without specimens and without a statement of use of the mark. That notice is hereby withdrawn and the procedure thereunder terminated. Henceforth, in order to receive a formal filing date, an application under section 44 must include in the application at least one specimen and a statement that the mark has been used.

Those applicants having cases now under suspension in this Office in accordance with the Apr. 1974 OFFICIAL GAZETTE notice will be notified individually of the Office policy regarding specimens and use as set out above.

Finally, the withdrawal of this rules proposal should in no way be interpreted as a diminution of the continuing support of the Department of Commerce and this Office for the Trademark Registration Treaty. Under that Treaty it will be possible to treat all applicants, foreign and domestic, equally in regard to initial use requirements for filing an application for trademark registration in the United States Patent and Trademark Office.

DONALD W. BANNER,
Commissioner of Patents and Trademarks.

June 16, 1978.

JORDAN J. BARUCH,
Assistant Secretary for Science and Technology.

[FR Doc. 78-18301; Filed 6-29-78; 8:45 am]
[973 TMOG 19]

(123) **THE RETENTION SCHEDULE FOR TRADEMARK RECORDS**

As with most government agencies, the Patent and Trademark Office disposes of old files, papers and records pursuant to a specific schedule. In an effort to clarify any questions concerning the procedures for disposing of Trademark records and in response to public inquiries, the present Retention Schedule for Trademark Records and other records including trademark matters which may be of interest to the public is set forth as follows:

International Intellectual Property Activities Case Files. Project case files showing Patent and Trademark Office activity relating to problems concerning the protection of intellectual property throughout the world. Includes correspondence with private individuals, the Department of State and other countries; reports, records of international meetings concerning patents; trademarks and other matters pertaining to the protection of intellectual property throughout the world; and other materials relating to international affairs.	*PERMANENT.* Transfer to FRC 5 years after close of case. Offer to National Archives when 25 years old.
Proposed Intellectual Property Legislation Files. Documents accumulated in the preparation and processing of legislation proposed by or in the interests of the Patent and Trademark Office. Includes drafts of legislation, reports to committees on introduced legislation, and comments on legislative proposals.	*PERMANENT.* Transfer to FRC after 5 years. Offer to National Archives when 25 years old.
Trademark Adversary Proceedings Files. Consists of Trademark Opposition, Cancellation, Interference, and Concurrent-Use proceedings files.	The past schedule to destroy after 10 years is in the process of being changed. At this time, these records are not being disposed of pending the new amendment to this section.
Canceled Trademark Registration Files. Consists of original application and all related correspondence.	Destroy 2 years after the date of cancellation.
Expired Trademark Registration Files. Consists of original application and all related correspondence.	Destroy 2 years after expiration of registration.
Abandoned Trademark Application Files. Consists of original application and all related correspondence.	Destroy 2 years after date of abandonment.
Trademark Renewal Index. Index to trademark registrations that are renewed.	*PERMANENT.* Offer to National Archives when no longer needed for reference.
Indexes to Trademark Applications. Index shows applicant's name, serial number of application, filing date, name of mark description of goods, attorney's name, and final disposition of the application.	
A. Applicant's Index.	*PERMANENT.* Offer to National Archives when no longer needed for reference.
B. Serial Index.	*PERMANENT.* Offer to National Archives when no longer needed for reference.
Proceedings Index to Trademark Adversary Proceedings. Index arranged by type of proceeding. Shows status of proceeding prior to and immediately after a decision by the Board.	Destroy 3 years after termination of the proceeding.
Trademark Adversary Proceeding Records. Card file showing records of Trademark Adversary Proceedings.	*PERMANENT.* Offer to National Archives when no longer needed for reference.
Trademarks Published in Official Gazette. Clippings of marks from *Official Gazette.*	
a. Those which have been opposed.	*Retain in agency until no longer needed for reference.*
b. All others.	*Destroy when mark is registered.*
Trademark Registrant's Index. Index to Trademark registrant's name, includes serial and registration numbers, date of registration, line of goods and other related information.	*PERMANENT.* Offer to National Archives when no longer needed for reference.
Class of Goods Index. Card index used to indicate into what class any conceivable goods may fall.	Destroy after information transferred to magnetic media.
Index to Trademark Trial and Appeal Board Cases. Record of trademark trial and appeal board cases.	*PERMANENT.* Offer to National Archives when no longer needed for reference.
Public Advisory Committee for Trademark Affairs Files.	

a. Agenda, minutes, correspondence, reports and related supporting files.	*PERMANENT.* Transfer to Federal Records when 10 years old. Offer to National Archives when 25 years old.
b. Working papers and reference materials.	Destroy when 10 years old or no longer needed for reference, whichever is sooner.
Seminar in Trademark practice and Procedure Files. Record set of training materials used in training trademark examiners.	*PERMANENT.* Transfer to Federal Records Center when 10 years old. Offer to National Archives when 25 years old.
Trademark Petitions Files. Petitions to the Commissioner relating to trademarks with related materials.	
a. Original Petitions in trademark case file.	Dispose of with related case file.
b. Other copies.	Destroy when 2 years old.
Trademark Protest Letters. Letters of protest to the Commissioner related to trademarks.	Destroy when no longer needed or when three years old, whichever is earlier.
International Patent and Trademark Activities Case Files. Project case files showing Patent and Trademark Office activity relating to international patent and trademark programs.	
a. Records that supplement the International Property Activities Case Files (Item 103).	*PERMANENT.* Transfer to office responsible for international affairs after case is closed.
b. Other materials.	Destroy 5 years after close of case or sooner if no longer needed.
International Intellectual Property Activities Case Files. Project case files showing Patent and Trademark Office activity relating to problems concerning the protection of intellectual property throughout the world. Includes correspondence with private individuals, the Department of State and other countries; reports; records of international meetings concerning patents; trademarks and other matters pertaining to the protection of inteilectual property throughout the world; and other materials relating to international affairs.	*PERMANENT.* Transfer to FRC 5 years after close of case. Offer to National Archives when 25 years old.
Proposed Intellectual Property Legislation Files. Documents accumulated in the preparation and processing of legislation proposed by or in the interest of the Patent and Trademark Office. Includes drafts or legislation, reports to committees on introduced legislation, and comments on legislative proposals.	*PERMANENT.* Transfer to FRC after 5 years. Offer to National Archives when 25 years old.
Bulky Trademark Specimens. Trademark applications specimens which do not strictly meet the basic requirements for physical form of specimens which state:	Destroy 30 days after applicant is notified that the specimens are unacceptable, unless picked up sooner by the applicant.
1. That they be made of material suitable for being placed inside a manila file wrapper.	
2. That they be capable of being arranged flat, such as being folded.	
3. That they be of a size not to exceed $8\frac{1}{2}$ inches wide by 13 inches long. (Rule 2.56)	
These requirements provide for specimens which will fit inside the application file wrapper, which is 9×14 inches in size and which will conveniently expand to about one inch thickness.	
Specimens which do not meet the above requirements are referred to as "bulky" specimens and the Examiner must require that they be replaced by specimens of acceptable size and shape.	

February 28, 1979.

[980 TMOG 16]

SAUL LEFKOWITZ,
Acting Assistant Commissioner for Trademarks.

(124) **Flexible Working Hours**

On Jan. 4, 1979 the Patent and Trademark Office is beginning a 15 month experiment with flexible working hours for its employees. Under the "flexitime" experiment many of the Office's employees will have flexibility to begin their workdays as early as 6:30 a.m. or as late as 9:30 a.m., and end their workdays between 3:00 p.m. and 6:30 p.m. Employees in every case shall of course work eight hours each day. All or most patent and trademark examiners will have flexible hours.

The public hours of the Patent and Trademark Office will continue to be 8:30 a.m. to 5:00 p.m. All units of the Office which deal directly with the public will be staffed to answer telephone calls and receive visitors during those hours. All employees will be on duty from 9:30 a.m. to 3:00 p.m. The patent public search room will continue to operate from 8:00 a.m. until 8:00 p.m. and the trademark search room from 8:00 a.m. until 5:30 p.m.

With the advent of flexible hours, it will be advisable for members of the public to make appointments in advance when they wish to interview examiners.

DONALD W. BANNER,
Dec. 13, 1978. *Commissioner of Patents and Trademarks.*

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(125) **Bulky Specimens in Trademark Cases**

When an application containing bulky specimens is received, it will be given a filing date; but before it is forwarded to the Examiner, a letter will be sent to the applicant requiring new specimens in conformance with Rule 2.56. If the new specimens are not received within six months from the date of the letter, the application will be abandoned. The letter will also note that the "bulky specimens" received by the Office will be held for pick-up by the applicant for 30 days from the date of the letter, and will then be destroyed.

This practice is being instituted to alleviate the increased storage difficulties posed by bulky specimens. As always, however, an Examiner has the discretion to request additional information in the form of bulky specimens during examination under Trademark Rule 2.61(b). In the case of International Class 16, at least one complete issue of a publication will still be required. Also in the situation where the mark is a configuration of the goods, or a configuration of the container of the goods, then one actual container may be required. The other four specimens should be facsimiles as described in Trademark Rule 2.57. All applicants are reminded that bulky specimens which are not picked up within 30 days of notification will be destroyed and that specimens having intrinsic value should not be filed.

The inconsistent provisions of the previous O.G. Notice concerning bulky specimens [900 T.M.O.G. 176 (July 25, 1972], are hereby repealed.

The new procedure will be put into effect on Apr. 1, 1979.

DONALD W. BANNER,
Feb. 28, 1979. Commissioner of Patents and Trademarks.

[980 TMOG 17]

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(126) **Public Advisory Committee for Trademark Affairs**

Reestablishment

In accordance with the provisions of the Federal Advisory Committee Act 5 U.S.C. App. (1976) and Office of Management and Budget Circular A-63 of Mar. 1974, and after consultation with GSA, it has been determined that the reestablishment of the Public Advisory Committee for Trademark Affairs is in the public interest in connection with the performance of duties imposed on the Department by law.

The Committee was first established in Sept., 1970, and its present charter expired on Jan. 10, 1979. Since its inception the purpose of the Committee has been to advise the Patent and Trademark Office concerning steps which can be taken to increase the efficiency and effectiveness of administration of the Trademark Act and to provide a continuing flow of knowledge from the private sector to the government in the field of trademarks. Approximately seventy-five per cent of the over one hundred twenty-five specific recommendations have been implemented at least in part. There is no question that the Committee has contributed greatly to the efficiency and effectiveness of the administration of the statute. In reviewing the Committee, the Secretary has sought continued effort towards this objective. The Committee's function cannot be accomplished by any organizational element or other committee of the Department.

As it was initially established, the Committee will continue to comprise the members of the Advisory Committee for Trademark Affairs of the United States Trademark Association. The membership is balanced and is under the control of the President of the Association. The Committee will continue to operate in compliance with the provisions of the Federal Advisory Committee Act.

Copies of the Committee's revised charter will be filed with appropriate committees of Congress.

Any inquiries or comments may be addressed to Patricia M. Davis, Committee Control Officer, Office of Trademark Program Control, U.S. Patent & Trademark Office; Washington, D.C. 20231; telephone (703) 557-3881.

GUY W. CHAMBERLIN,
Mar. 15, 1979. *Assistant Secretary for Administration.*

[FR Doc. 79-8929; Filed 3-22-79; 8:45 am]

[982 TMOG 14]

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(127) **Forms Booklet Available**

A new publication titled "Patent and Trademark Forms Booklet" dated Oct. 1979 is now available from the Superintendent of Documents. The price is $12.00 and the stock number is 003-004-00569-6.

The booklet contains forms for use by the public in both patent and trademark cases. The booklet is printed on 8 1/2 by 11 inch paper and is designed for use as a full size master copy for copying. It includes 52 English language forms (oaths, declarations, etc.) for use in patent cases, 69 non-English language forms for use under 37 CFR 1.69 situations in patent cases, 3 forms for use in international applications filed under the Patent Cooperation Treaty, and 70 forms for use in trademark cases.

Orders should be directed to:
Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

SIDNEY A. DIAMOND,
Mar. 26, 1980. *Commissioner of Patents and Trademarks.*

[993 TMOG 18]

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(128) **Reorganization of the Patent and Trademark Office**

In July 1980 the Patent and Trademark Office was reorganized to establish a fourth Assistant Commissioner position. The new Assistant Commissioner is known as the Assistant Commissioner for Finance and Planning. Set forth below is the text of Department of Commerce Organization Order 30-3B and an accompanying organization chart defining the functions and lines of authority for the principal units in the Patent and Trademark Office.

Section 1. Purpose

.01 This Order prescribes the organization and assign-

ment of functions within the Patent and Trademark Office. (Department Organization Order 30-3A prescribes the scope of authority and functions.)

.02 This revision reflects the realignment of existing elements of the Patent and Trademark Office to form the offices reporting to the newly established Assistant Commissioner for Finance and Planning (Section 9.), and incorporates the provisions of outstanding amendments.

Section 2. Organization Structure

The principal organization structure and line of authority shall be as depicted in the attached organization chart (Exhibit1).

Section 3. Commissioner of Patents and Trademarks

The Commissioner of Patents and Trademarks determines the policies and directs the programs of the Patent and Trademark Office and is responsible for the conduct of all activities of the Patent and Trademark Office. The Commissioner is principally assisted by a Deputy Commissioner, four Assistant Commissioners and a Solicitor whose main duties shall be as specified below.

a. The *Deputy Commissioner* shall assist the Commissioner in the direction of the Patent and Trademark Office; shall perform the duties of the Commissioner in the latter's absence; and shall direct the Office of Equal Employment Programs.

b. The *Assistant Commissioner for Patents* (an Assistant Commissioner under 35 U.S.C 3) shall provide administrative and policy direction to the patent examining and documentation operations which consist of the organizational elements enumerated in Section 5. of this Order. The Assistant Commissioner is assisted by a Deputy Assistant Commissioner. The Deputy Assistant Commissioner shall, among other duties as assigned, have immediate responsibility for patent examination and for the organizational elements enumerated in paragraph 5.01, and shall perform the duties of the Assistant Commissioner during the latter's absence. There shall also be an Administrator for Documentation who shall have immediate responsibility for domestic and foreign patent documentation and the organization elements enumerated in paragraph 5.02.

c. The *Assistant Commissioner for Trademarks* (an Assistant Commissioner under 35 U.S.C. 3) shall provide administrative and policy direction to the trademark registration and related operations which consist of the organization elements enumerated in Section 6. of this Order.

d. The *solicitor* shall be the chief law officer of the Patent and Trademark Office and shall provide administrative and policy direction to organizational elements enumerated in Section 7, of this Order. Pursuant to Department Organization Order 10-6, the Solicitor shall be subject to the overall authority of the Department's General Counsel with respect to legal matters involving the Patent and Trademark Office, other than in connection with the issuance of patents or the registration of trademarks. The Solicitor shall be assisted by a Deputy Solicitor who shall perform the duties of the Solicitor during the latter's absence.

e. *Assistant Commissioner for Administration* shall be the principal advisor to the Commissioner on the formulation and application of administrative policies. The Assistant Commissioner for Administration shall provide administrative and policy direction to the organizational elements enumerated in Section 8. of this Order. The Assistant Commissioner shall be assisted by a Deputy Assistant Commissioner who shall perform the duties of the Assistant Commissioner during the latter's absence.

f. The *Assistant Commissioner for Finance and Planning* shall be the principal advisor to the Commissioner on financial and planning matters. The Assistant Commissioner shall provide administrative and policy direction to the organizations enumerated in Section 9. of this Order. The Assistant Commissioner shall be assisted by a Deputy Assistant Commissioner. Among other duties as assigned, the Deputy Assistant Commissioner also shall be the Director of Resource Management, with immediate responsibility for the organizational elements enumerated in paragraph 9.01.

Section 4. Organizations Reporting To The Commissioner

.01 The *Board of Appeals* shall be responsible for hearing and deciding appeals from adverse decisions of examiners upon applications for patent.

.02 The *Board of Patent Interferences* shall conduct interference proceedings and make final determinations in the Patent and Trademark Office as to priority of invention. The Board shall also hear and decide questions concerning property rights in inventions in the atomic energy and space fields brought before it under the provisions of Sections 2182 and 2456 (d) and (e) of Title 42, U.S.C.

.03 The *Office of Information Services* shall advise and represent the Commissioner on information matters; conduct programs fostering public understanding of the American patent system and of the functions, services and administrative publications of the Patent and Trademark Office; and develop publication policies,

.04 The *Office of Legislation and International Affairs* shall, subject to Department Organization Order 10-6, make studies and advise the Commissioner on policy and actions concerning matters which may require legislation or which involves international patent and trademark (intellectual property) matters; draft proposed legislation relating to patents and trademarks and advise on pending legislation affecting the Patent and Trademark Office; represent the Commissioner in the negotiation or renegotiation of treaties and the negotiation of other new major international initiatives; assist in the development and implementation of related programs; coordinate or conduct in cooperation with other appropriate Patent and Trademark Office organizations, negotiations in matters relating to existing international programs; and maintain liaison with the Office of the Secretary, the General Counsel, other agencies, international and foreign bodies, members of the public, and appropriate congressional committees in such matters.

.05 The *Office of Equal Employment Programs,* under the immediate direction of the Deputy Commissioner, shall be responsible for the design, development, implementation, review, and maintenance of all Patent and Trademark Office Equal Employment Opportunity (EEO) programs; including EEO complaint processes, the Affirmative Action Plan, upward mobility programs and other special emphasis programs such as those for women, Hispanic-Americans, the handicapped, and all protected groups and classes of employees.

Section 5. Organizations Reporting To The Assistant Commissioner For Patents

.01 Patent Examination Organizations.

a. The *Office of Patent Program Control* shall establish program activity targets and continually evaluate status against program objectives; provide training to examiners in patent practices and procedures; and provide planning evaluation and budget support to the examination organizations, and perform such other duties as assigned.

b. The *Patent Examining Groups* shall examine applications for patents to ascertain if the applicants are entitled to patents under the law and grant patents to those so entitled. Each examining group shall perform this function for patent applications falling within the generic category assigned to it. The number of examining groups and the coverage of the generic categories shall be determined by the Commissioner.

.02 Patent Documentation Organizations.

a. The *Office of Documentation Planning, Support and Control* shall analyze the examiner and public patent search files and all proposed programs concerning them; coordinate efforts in regard to numerical files;. develop and maintain overall documentation plans relating to these files; define the form, content and accessibility of these files and insure such definition through periodic

checks; initiate the acquisition and provision of patent documentation for these files; coordinate the development of an overall system, and the efforts of related implementing activities, to insure the accuracy and effective utilization of patent data; provide budgetary and other services for the documentation organizations; and establish performance standards and evaluation criteria for, and monitor and evaluate, the activities of the documentation organizations.

b. The *Office of International Patent Classification* shall direct Patent and Trademark Office initiatives designed to foster harmonization of the United States Patent Classification System with the International Patent Classification System. The Office shall also consult and participate with foreign counterparts representing national offices and appropriate international groups in further development and refinement of the International Patent Classification System. In carrying out such consultations and participations, it shall coordinate all related policy matters with the Office of Legislation and International Affairs.

c. The *Office of Micrographic Systems* shall develop and recommend plans for micrographic information systems including analyses of existing and proposed micrographic hardware and techniques suitable for meeting the particular demands of the U.S. Patent and Trademark Office. It shall also evaluate ongoing micrographic information systems in respect to the responsiveness of such systems to evolving informational needs. The foregoing shall be coordinated with other appropriate offices such as the Office of Automatic Data Processing Administration and the Office of Search Systems

d. The *Office of Search Systems* shall maintain a state-of-the-art awareness of machine-assisted information storage, access, retrieval, and display systems useful or potentially useful in searching patent documentation; participate with parties in the private and government sectors in cooperative programs designed to develop systems for Patent and Trademark Office utilization; evaluate the potential of existing and cooperatively developed systems; initiate the acquisition and adaption of selected systems and direct the maintenance of all non-operational search and display systems (equipment and materials); conduct and evaluate pilot tests in Patent and Trademark Office operating environments; recommend operational establishment or discontinuance of evaluated systems; and monitor and evaluate the performance of operational systems.

e. The *Scientific Library* maintains collections of technical and scientific information such as foreign patents, periodicals, books and other publications, in printed or microfilm form, and provides related services and facilities, for use by the public and by examiners and other personnel in the internal operations of the Patent and Trademark Office.

f. The *Classification Groups* shall develop, implement and maintain subject matter classification systems for the organization of patent search files of prior art including the preparation of definitions, indexes, schedules, and related documentations. Each classification group shall perform this function for subject matter falling within the generic category (chemical, electrical, mechanical) assigned to it.

Section 6. Organizations Reporting To The Assistant Commissioner For Trademarks

.01 The *Office of Trademark Program Control* shall develop guidelines governing trademark examining procedures; establish program activity targets and continually evaluate status against program objectives; and provide instruction in trademark practice and procedures and coordinate trademark administrative support activities.

.02 The *Trademark Trial and Appeal Board* shall be responsible for hearing and deciding adversary proceedings involving interfering applications, oppositions to registration, cancellations, and concurrent use proceedings; and for hearing and deciding appeals from final refusals of the trademark examiners to allow the registration of trademarks.

.03 The *Trademark Examining Operation* shall be responsible for the classification of trademark applications into classes of goods and services, the examination and processing of these applications, and the registration of trademarks, service marks, and certification marks, and maintain the principal and supplemental registers of trademarks. The Trademark Examining Operation shall be composed of examining divisions, the number and coverage of such divisions to be determined by the Commissioner.

Section 7. Offices Reporting To The Solicitor

.01 The *Office of the Solicitor* shall handle all litigation to which the Commissioner is a party and provide other legal services, including advice and assistance on legislative matters, and maintenance of the law library.

.02 The *Office of Government Employee Inventions* shall review questions of ownership of patents and rights to inventions made by Government employees in issues brought before it under Executive Order 10096 and shall make appropriate recommendations to the Commissioner for action on such questions.

Section 8. Office Reporting To The Assistant Commissioner For Administration

.01 The *Office of Automatic Data Processing Administration* shall coordinate automatic data processing resources for the Patent and Trademark Office; recommend to management the acceptance, updating or termination of all Patent the Trademark Office automatic data processing resources and contracts; provide management with regular reviews on the status of automatic data processing expenditures and utilization of resources; advise management on alternatives for meeting defined short and long range ADP requirements; coordinate ADP procurement and installation; operate a central computer facility for the Patent and Trademark Office responsive to user needs; conduct and review specified ADP feasibility studies; design, implement, operate and coordinate specialized ADP management information systems, including data collection, manipulation and dissemination; coordinate ADP liaison for the Patent and Trademark Office with the Department of Commerce and other Federal agencies; provide programming and systems design resources for approved projects based on requirements; provide technical assistance to the Patent and Trademark Office to fulfill needs as specified by the user.

.02 The *Office of General Services* shall plan and administer a broad Office-wide program of general services, including procurement control; property, space, and facilities management; communications, files, mail and correspondence, and forms management; administrative printing; and clearance of all requirements involving contractual procurements, including liaison with the Department of Commerce, in connection therewith.

.03 The *Office of Patent and Trademark Services* shall provide materials and services to the public, many on a fee basis, as well as to examiners and other personnel for internal operations of the Patent and Trademark Office. It shall maintain a Public Search Room with a collection of U.S. patents; record assignments and other instruments for the transfer of property rights to patents and trademarks; furnish copies of patents, trademark registrations and office records; and provide drafting services. It shall also conduct an initial examination of patent applications for compliance with law and regulations as to form and certain matters of factual content; grant or deny a filing date based on such examination, and forward to the Examining Groups those granted a filing date; acknowledge the acceptance or rejection of applications for examination; and maintain records on the status and location of all applications.

.04 The *Office of Personnel* shall administer activities relating to recruitment, placement, employee relations, training and career development, incentive awards, performance rating, position classification and wage administration, group-management relations, and various em-

ployee benefit programs.

.05 The *Office of Publications* shall schedule and manage the processing and movement of allowed patent application files in procuring the creation of full patent text machine language data base and the composition and printing of weekly issues and related announcements in the Official Gazette; provide requisition and scheduling services for trademark publications; monitor the quality or performance by contributing sources and maintain close liaison with U.S. Government Printing Office; and prepare and issue patent grants and periodic publications of patent indexes.

Section 9. Offices Reporting To The Assistant Commissioner For Finance And Planning

.01 Resource Management Organizations.

a. The *Office of Finance* shall develop and maintain the financial accounting system of the Patent and Trademark Office, perform accounting operations for the revenue, trust funds, and appropriation of the Patent and Trademark Office, including maintenance of general accounts and related fiscal records, preparation of financial statements and reports, audit and certification of vouchers for payment, issuance of deposit account statements, initiation of action to collect amounts due the Patent and Trademark Office, and administration of the payroll system and related employee accounts; and provide financial advice.

b. The *Office of Budget* shall develop and maintain Patent and Trademark Office budget and fiscal plans; provide advice and staff to assist line managers in preparing, reviewing, justifying, presenting and executing the Patent and Trademark Office's budget; develop budgetary policies and procedures for the entire Patent and Trademark Office budget process; maintain budgetary accountability for available funds: maintain external liaison on budgetary matters; and provide assistance in integrating program plans with the budgetary process.

c. The *Office of Planning and Evaluation* shall coordinate and help develop medium and long range plans for all Patent and Trademark Office programs; develop and administer a system for integrating the Patent and Trademark Office planning process with the budgetary process; coordinate and help develop goals, objectives, and strategies for the operating program offices of the Patent and Trademark Office, and evaluate the effectiveness of the administration of the programs against those goals, objectives and strategies.

.02 The *Office of Management and Organization* shall develop and/or receive requests for management improvement systems, programs or projects, including studies for work measurement, resource utilization, workflow analyses, computer systems, operations research and other operational problems and programs and determine the best resource(s) for analyses, resolution, and implementation; conduct organizational reviews; conduct, coordinate or assign studies on resource utilization, procedures or workflow analyses; coordinate work measurement studies; manage Patent and Trademark Office policy orders and administrative instructions and issuances; develop and maintain statistical data; and develop and manage a historical file on all management studies and statistical data developed.

.03 The *Office of Technology Assessment and Forecast* shall continually assess the status of technological activities in all countries; compare inventive activity in the United States relative to other nations; and forecast development on a worldwide basis.

.04 The *Office of Quality Review* shall establish criteria for reviewing, and perform a review of the quality of examination of patent and trademark applications which have been examined. The Office shall review; the application of substantive statutory criteria for patentability or registrability; the adequacy of the examiner's search of prior patent, trademark or other literature; and the adherence to approved examining procedures. The Office shall provide information to managers and examiners on the results of its review, and make recommendations for maintaining or improving the quality of examination.

Section 10. Effect on Other Orders

This Order supersedes Department Organization Order 30–3B of Aug. 19, 1976, as amended.

SIDNEY A. DIAMOND,
Commissioner of Patent and Trademarks.
Assistant Secretary for Science and Technology.
Acting Assistant Secretary for Administration.

[1001 O.G. 10]

Change in Official Gazette Entry to Show Cancellation of Fewer Than All Classes in a Multiple Class Registration

Effective with the *Official Gazette* issue of December 16, 1980, there will be a change in the *Official Gazette* listing entitled "Trademark Registrations Cancelled." Beginning with that issue, "Trademark Registrations Cancelled" will list:

(1) single class registrations cancelled;
(2) multiple class registrations cancelled in all classes;
(3) multiple class registrations cancelled in fewer than all classes.

For every entry in the listing, the specific classes cancelled will be included in parentheses, next to the registration number and mark.

For a single class registration and for a multiple class registration in which every class has been cancelled, the class number(s) shown in parentheses will represent every class to which the registration applied.

For a multiple class registration in which fewer than all classes have been cancelled, the *Official Gazette* entry will include the word "only" following the notation of classes in parentheses, for example: (Int. Cls. 12 and 20, only). In this example, the addition of the word "only" would indicate that there are classes in the registration in addition to Classes 12 and 20, but only Classes 12 and 20 have been cancelled.

MARGARET M. LAURENCE,
Oct. 29, 1980. *Assistant Commissioner, for Trademarks.*

[1000 TM 21]

Trademark Examining Procedure for Amended Applications; Reporting Oldest Dates of Amended Trademark Applications

Effective immediately, the order in which amendments to trademark applications are examined is changed. Previously, Examiners have usually acted on amended cases in order of filing date of the application which the amendment concerned, i.e., amended cases with the oldest filing date were examined first. Under the new procedure, amended cases will normally be examined in the order in which the amendment or other response is received, i.e., amendments that are received first will normally be examined first.

Effective with this issue of the *Official Gazette* (Trademark Section) in order to reflect more accurately the condition of division dockets, the column reporting the date of the oldest amended application in each division has been changed to indicate the date of receipt of the oldest filed amendment. Under this new method of reporting the oldest date of receipt of a filed amendment upon which no action has been taken by an Examiner will be indicated for each division of the Trademark Examining Operation.

RENE D. TEGTMEYER,
July 15, 1971. *Assistant Commissioner.*

[889 O.G. TM 6]

Trademarks—Status Inquiries

In order to expedite the handling of inquiries regarding the status of both new and amended applications, the Patent Office has adopted a new procedure. Henceforth, status inquiries should be filed in duplicate and should identify by title and date the last paper known by the applicant to have been filed to the case. Each inquiry should be accompanied by a self-addressed, stamped envelope. The original inquiry will be entered in the file and the duplicate will be marked with a response and returned to the applicant. The date when the next office action can be expected will not be given unless specifically requested.

Status letters have been used by applicants to establish diligence in support of a later petition to revive should the application become abandoned. Under current practice, attorneys have frequently submitted status letters as a matter of course for such purposes. This has proved burdensome both to attorneys and the Patent Office. Until further notice, in new applications, the applicant will be considered to have exercised diligence in connection with a petition to revive an application abandoned for failure to respond to the initial office action if inquiry as to the status of the application is received by the Patent Office within either one of the two following periods, whichever expires later:

a. Eighteen months from the filing date of the application, or

b. A reasonable period after the *Official Gazette* (Trademarks) indicates that the filing date of the oldest new case awaiting action in the Division to which the application is assigned is more recent than the filing date of the application.

For amended cases, the applicant will be considered to have exercised diligence if inquiries as to the status of the application are received by the Patent Office within either one of the two following periods, whichever expires later:

a. Eighteen months after filing a response to the examiner's last received action, or

b. A reasonable period after the *Official Gazette* (Trademarks) indicates that the date of the oldest amendment filed that is awaiting action in the Division to which the application is assigned is more recent than the date of filing the last amendment to the application.

It should be noted as an exception to the above that status inquiries are totally unnecessary during period(s) of time when an application is suspended pursuant to 37 CFR 2.67.

Applicants are urged not to file status inquires within the first year after filing due to the current backlog of new applications.

ROBERT GOTTSCHALK,
July 28, 1971. *Acting Commissioner of Patents.*

JAMES H. WAKELIN, JR.,
July 30, 1971. *Assistant Secretary for Science and Technology.*

[FR. Doc. 71-11532 Filed 8-10-71; 8:48 am]
Published in 36 F.R. 14771, Aug. 11, 1971

[890 O.G. TM 5]

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(129) **Title 37—Patents, Trademarks, and Copyrights**

Chapter I—Patent Office, Department of Commerce

Parts 2 and 6—Rules of Practice in Trademark Cases

International Trademark Classification

A proposal was published at 37 F.R. 6404 to revise §6.1 of the Rules of Practice in Trademark Cases. The Patent Office proposed to establish the "International Classification of Goods and Services to Which Trademarks Are Applied" (the subject of the "Nice Agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks" of 1957, as revised at Stockholm on July 14, 1967) as the primary classification of goods and services for registration of trademarks and service marks. Pursuant to the Notice, written comments have been received, and a public hearing was held on June 14, 1972. Full consideration has been given to all matter presented, and changes in the text of the original proposal have been made in view thereof. It has been determined that adoption of the international classification system is desirable.

The Patent Office has studied the international classification and, since Mar. 5, 1968, has indicated the appropriate international class in all publications and on all issued registrations and renewals as a subsidiary classification. Based on this experience and the comments received, it is now believed that adoption of the international schedule as the primary classification system is desirable. The international system is easier to administer because of fewer classes of goods and the availability of an alphabetical listing of goods and services.

The Nice Agreement provides for an International Committee of Experts whose objective is to keep the

classification current. The classification of specific goods and services is set forth in the Alphabetical List entitled "International Classification of Goods and Services to Which Trademarks Are Applied" (published by the World Intellectual Property Organization). In addition, the International Trademark Classification List contains the names of the classes setting forth the basic contents of each class. The Alphabetical List also comprises explanatory notes which serve as guidelines for determining the appropriate international class for a specific product or service.

The alphabetical listing within the International Trademark Classification Manual is currently used by the Office as a guideline for determining the degree of particularity of identification of goods. See "Identification of Goods and Services in Trademark Applications," 36 F.R. 13232; July 16, 1971.

Applications for registrations filed on or after Sept. 1, 1973, and registrations issuing thereon, will be classified according to the international classification set forth in the new §6.1. Accordingly, the international classification is adopted under Section 30 of the Trademark Act of all purposes under the statute and rules; and, therefore, will be the criterion for determining, inter alia, fees.

Applications for the registration of marks filed on or before Aug. 31, 1973, appeals or petitions to revive or oppositions filed in connection with said applications, and affidavits, renewals and petitions for cancellation filed in connection with registrations issuing thereon, will continue to be processed under the classification system existing at the time the mark was registered.

All applications which are published and registrations which are issued will carry both the appropriate international classification and existing U.S. classification number.

An insufficient fee, in connection with an appeal or opposition on any application or in connection with an affidavit or renewal filed in connection with any registration, will not render the same unacceptable, if the proper fee is submitted within a time limit set forth in a notification of the defect, providing the proper fee for at least one class has been originally submitted within the applicable time limit. This will be the case even if the full fee is not received within the sixth year in the case of an affidavit filed under Section 8 or before the end of the twentieth year, including the grace period, in the case of renewal applications, or within the six-month statutory response period in the case of an appeal, or within the thirty-day opposition period, or any extension thereof in the case of the filing of an opposition.

The existing classification system will continue to be used for searching registered and pending marks until all documents in the search file are organized on the basis of the international system of classification. Until this changeover is effected, the U.S. class designation will continue to be printed on all published applications and registrations issued under the existing or the international classification system to facilitate searching on the basis of the existing U.S. system of classification.

Until all applications filed on or before Aug. 31, 1973, have been disposed of, the trademark sections of the *Official Gazette*, which are organized by class, will include two sections: one for applications published or registrations issued on the basis of applications filed on or before Aug. 31, 1973, organized by class according to the U.S. schedule of classes; the other section for applications published or registrations issued on the basis of applications filed on or after Sept. 1, 1973, organized by class according to the new international schedule.

Certification marks and collective membership marks will continue to be classified as set forth in redesignated §§6.3 and 6.4.

Efforts will be made to have the International Trademark Classification List printed by the Government Printing Office or otherwise assure the availability of the List from local sources. Notification will appear in the *Official Gazette* when the List is available from local sources of the Government Printing Office.

The English edition of the "International Classification of Goods and Services to Which Trademarks Are Applied" can presently be ordered from:

Sales Branch, The Patent Office, Block C
Station Square House, St. Mary Cray
Orpington, Kent, England

Certain modifications and additions to the international trademark classification have been published as supplements and are also available from the British Office. In addition, and inasmuch as the World Intellectual Property Organization (WIPO) has issued the List in several languages, it is anticipated that an English version will be published by that organization.

We have been advised by the Patent Office of the United Kingdom that the only acceptable methods of payment for the International Trademark Classification List are by International Postal Money Order or by banker's draft payable in sterling and drawn on a bank in the United Kingdom.

* * * * *

May 14, 1973.

ROBERT GOTTSCHALK,
Commissioner of Patents.
BETSY ANCKER-JOHNSON,
Assistant Secretary for Science and Technology.

Published in 38 F.R. 41681, June 4, 1973

[911 O.G. TM 210]

(Note: Rule 2.85 (Classification schedules) was revised and Rule 6.1 (International schedule of classes of goods and services) was established as of September 1, 1973 by this notice; prior U.S. schedule of classes was redesignated as Rule 6.2.)

Change in Format for Publishing Trademarks for Opposition

Section 30 of the Trademark Act of 1946 as amended by Public Law 772, 87th Congress, approved October 9, 1962, 76 Stat. 769, provides for the filing of a combined application for the registration of a trademark in more than one class.

The present practice of publishing the mark with pertinent data under each class in which registration is sought results in needless duplication.

Beginning with the issue of November 3, 1964, "Marks Published for Opposition" will be divided into two sections. In Section 1, all marks presented in combined applications for registration in more than one class will be published with only one reproduction of each mark.

The reproduction of the mark will be followed by the class numbers and titles, and under each class will appear the description of the goods in connection with which the trademark is used. If the date of first use applies to all classes, it will appear following the last class; otherwise, the dates of use will appear after each class.

Trademarks presented in applications for registration in a single class will be published, as in the past, in class order, in Section 2.

The same procedure will be followed in the notice of the issuance of registrations on the Supplemental Register.

Sept. 18, 1964.

EDWIN L. REYNOLDS,
First Assistant Commissioner.

[807 O.G. TM 51]

Changes in Format for Publishing Trademarks for Opposition

Because of the adoption of the International classification of goods and services by the United States as of September 1, 1973 (see *Official Gazette* of June 26, 1973, 911 O.G. TM 210), it is necessary to change the arrangement in the *Official Gazette* of the marks published for opposition.

Beginning with the issue of May 7, 1974, the section

of the *Official Gazette* entitled "Marks Published for Opposition" will be divided into four sections instead of the present two sections. (For the preceding change from one to two sections, see *Official Gazette* of October 13, 1964, 807 O.G. TM 51.) Sections 1 and 2 will be according to international classification and will contain marks in applications filed on or after September 1, 1973, and Sections 3 and 4 will be according to prior United States classification and will contain marks in applications filed on or before August 31, 1973.

In Section 1, all marks presented in combined applications filed on or after September 1, 1973 for registration in more than one international class will be published with only one reproduction of each mark. The reproduction of the mark will be followed by the international class numbers, and under each class will appear the goods or services in connection with which the mark is used. If the date of first use applies to all classes, it will appear following the last class; otherwise, the dates of use will appear after each class.

In Section 2, all marks presented in applications filed on or after September 1, 1973 for registration in a single class will be published in international class order.

In Section 3, all marks presented in combined applications filed on or before August 31, 1973 for registration in more than one prior United States class will be published with only one reproduction of each mark. The reproduction of the mark will be followed by the prior United States class numbers and titles, and under each class will appear the goods or services in connection with which the mark is used. If the date of first use applies to all classes, it will appear following the last class; otherwise, the dates of use will appear after each class.

In section 4, all marks presented in applications filed on or before August 31, 1973 for registration in a single class will be published in the prior United States class order.

The following explanation will appear under the heading "Marks Published for Opposition":

> The following marks are published in compliance with section 12(a) of the Trademark Act of 1946. Applications for the registration of marks in more than one class have been filed as provided in section 30 of said act as amended by Public Law 772, 87th Congress, approved Oct. 9, 1962, 76 Stat. 769. Opposition under Section 13 may be filed within thirty days of the date of this publication. See Rules 2.101 to 2.105.
>
> A separate fee of twenty-five dollars for opposing each mark in each class must accompany the opposition.

Sections 1 through 4 will appear immediately after the above explanation, the sections being designated as follows:

Section 1. International classification—Application in more than one class
Section 2. International classification—Application in one class
Section 3. Prior United States classification—Application in more than one class
Section 4. Prior United States classification—Application in one class

The same procedure of dividing into four sections will be followed in the notice of the issuance of registrations on the Supplemental Register.

RENE D. TEGTMEYER,
Mar. 22, 1974. *Assistant Commissioner for Trademarks.*

[921 O.G. TM 122]

Charges Against Deposit Accounts Under Special Conditions

The practice as to deposit accounts is hereby extended to include charges against deposit accounts under special conditions. Charges under this practice shall not exceed $50 for each trademark application, registration or opposition.

The Director and the Assistant to the Director of the Trademark Examining Operation are authorized to make a charge against a deposit account provided prior approval, as by telephone, is obtained from the applicant, registrant, attorney or agent. This practice is limited to ex parte appeals to the Trademark Trial and Appeal Board, oppositions, affidavits under the provisions of Section 8, and applications for renewal and may be exercised only in emergency situations, such as where a party is unable to file the fee within the statutory period.

When such a charge is made, prior approval will be indicated in the file by identification of the name of the authorizing party, the date and the type of authorization, the purpose for which the charge is made, and the deposit account number.

WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

[879 O.G. TM 151]

Hand Delivery of Trademark Papers

Trademark papers which are not accompanied by fees or by authorization to charge a deposit account, may be filed by hand in the Trademark Docket Section or in the Incoming Mail Section of the Mail and Correspondence Division. However, to avoid confusion concerning money matters, when papers which are accompanied by fees or by authorization to charge a deposit account are filed by hand, they should be delivered only to the window in the Incoming Mail Section of the Mail and Correspondence Division where personnel can immediately refer the money or the charge to the Cashier. Trademark Examiners should not be requested to receive papers for filing (either with or without fees) since there is no convenient procedure by which the Examiners can transmit such papers to proper locations.

If a receipt is desired from the Trademark Docket Section, it may take the form of a duplicate copy of the paper or of a card identifying the paper and the application. The receipt will be date-stamped at the same time as the paper and handed back to the person delivering the paper. If a receipt is desired from the Incoming Mail Section, a card should be used. The card will be date-stamped and handed back to the person delivering the paper.

When a card is used for receipt, it should contain sufficient information to identify the paper and the application clearly, such as applicant's name, the serial number and filing date of the application, the mark, and the title or a description of the paper being filed.

In the discretion of the Assistant Commissioner for Trademarks, or of the Director of the Trademark Examining Operation, or of the Trademark Trial and Appeal Board, papers appropriate for those Offices (such as petitions or briefs) may be filed by hand in such Offices.

The procedure set forth in the notice entitled "Hand-Delivery of Papers" in the *Official Gazette* of February 26, 1974 (919 O.G. TM 180) pertains to papers for patent applications. The designation "Examining Group" used in that notice relates to the patent examining area of the Patent Office. (The equivalent designation in the trademark examining area is "Examining Division.")

RENE D. TEGTMEYER,
Aug. 21, 1974. *Assistant Commissioner for Trademarks.*

[926 O.G. TM 132]

Mail Delays and Petitions to Revive (Trademarks)

Since applications that become abandoned unintentionally present burdens to both the Patent office and the applicant, a simplified procedure has been devised to

alleviate these burdens when the abandonment results from a delay in the mails. This procedure (which is similar to the procedure adopted for patent applications at 910 O.G. 402 and 910 O.G. TM 76) provides for an automatic petition to revive.

When a trademark communication which falls within the circumstances enumerated below is mailed to the Patent Office more than three full days prior to the due date, a conditional petition may be attached to the communication. If the communication is received in the Patent Office after the due date and the application becomes abandoned, the conditional petition will become effective, subject to the following requirements. The petition must include (1) an authorization to charge a deposit account for any required fees, including the petition fee, and (2) an oath or declaration signed by the person mailing the communication and also signed by the applicant or his attorney stating that the communication and petition were either placed in the United States mail as first class or air mail or placed in the mail outside the United States as air mail. Since mail handled in this manner may reasonably be expected to reach the Patent Office by the due date, any mail delays beyond such time will be considered to constitute unavoidable delay and sufficient cause to grant a petition to revive (Section 12(b) of the Trademark Act of 1946).

The circumstances under which this procedure may be used are those where the communication, if timely filed, (1) would be a proper and complete response to an action or request by the Patent Office, and (2) would stop a period for response from continuing to run. Accordingly, this procedure would be appropriate for:

1. A response to a non-final Office action.
2. A response to a final Office action which places the application in condition for publication or issue.
3. A notice of appeal and requisite fee.
4. An appeal brief.

A suggested declaration form for the petition is shown below:

Applicant:
Serial No.: Petition to Revive
Date Filed:
Mark:

I hereby declare that the attached communication is being deposited in ( ) the United States mail as first class or air mail, or ( ) the mail outside the United States as air mail, in an envelope addressed to: Commissioner of Patents, Washington, D.C. 20231, on _____, which date is more than three full days prior to the due date, at _____, by _____.
(Location) (Name of individual)

In the event that such communication is not timely filed in the Patent Office, it is requested that this paper be treated as a petition to revive and that the delay in prosecution be held unavoidable.

The petition fee is authorized to be charged to Deposit Account No. _____ in the name of _____.

The undersigned declares further that all statements made herein of his own knowledge are true, and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or document or any registration resulting therefrom.

Date: (Signature of applicant or applicant's attorney)
And
Date: (Signature of person mailing, if other than the above)

Normal petition practices are not affected in those situations where this procedure is either not elected or not appropriate, nor does this procedure bar the granting of a petition in different fact situations where justified.

RENE D. TEGTMEYER,
Mar. 21, 1974. *Assistant Commissioner for Trademarks.*

[921 O.G. TM 126]

Recording of Documents Affecting Title

The Patent Office is liberalizing its policy concerning the recording of documents, other than assignments, which affect title to trademark registrations and applications. Under Rule 2.185 of the Trademark Rules of Practice, instruments affecting title to a trademark registration or application, and licenses of trademarks which are the subject of trademark registrations or applications, will be recorded even though the recording thereof may not serve as constructive notice under Section 10 of the Trademark Act of 1946, as amended (15 U.S.C. 1060).

WILLIAM E. SCHUYLER, JR.,
June 16, 1971. *Commissioner of Patents.*

Published in 36 F.R. 13231; July 16, 1971

[889 O.G. TM 2]

Separation of the Patent and Trademark Sections of the Official Gazette

Effective February 2, 1971, the *Official Gazette* will be separated into two parts to be known as the *Patent Official Gazette and the Trademark Official Gazette.*

* * * * *

Orders for subscriptions should be addressed to the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Also effective February 2, 1971, the *Official Gazette* will no longer contain "Decisions in Patent and Trademark Cases." Decisions of the type heretofore found in the "Decisions in Patent and Trademark Cases" are published by non-Federal organizations such as, for example, the Bureau of National Affairs, Inc., 1231 25th St. NW., Washington, D.C. 20037, and West Publishing Co., 50 Kellogg Blvd., St. Paul, Minn. 55102.

Finally, the "Decisions Leaflet" of the *Official Gazette* will no longer be supplied as a separate subscription item after January 26, 1971. According to present plans, however, both the *Patent Official Gazette* and the *Trademark Official Gazette* will have identical "Patent Office Notices" sections containing notices of the various types heretofore published in the Gazette decision leaflet and Trademark Section. Those notices of particular interest to Patent Office employees will be accumulated and published approximately every fourth week, and distributed separately to employees.

WILLIAM E. SCHUYLER, JR.,
Dec. 29, 1970. *Commissioner of Patents.*

[882 O.G. TM 33]

Trademark Office Actions

Effective Apr. 1, 1972, trademark applicants or their attorneys will be provided with only one carbon copy of any office action, and the mailing of an additional carbon copy will be discontinued.

This change is consistent with the current practice in the patent examining operations and should result in greater efficiency in the preparation and mailing of office actions.

ROBERT GOTTSCHALK,
Feb. 7, 1972. *Commissioner of Patents.*

[895 O.G. TM 238]

Wording In Verification or Declaration of

Trademark Application

Applicants and attorneys are requested to use the following wording in the part of the verification or declaration of the trademark application which indicates the signer's belief that the mark applied for does not resemble another person's mark:

> —that no other person, firm, corporation, or association, to the best of his knowledge and belief, has the right to use such mark in commerce either in the identical form thereof or in such near resemblance thereto *as to be likely, when applied to the goods of such other person, to cause confusion, or cause mistake, or to deceive:—*

The wording emphasized conforms to the present language of both Sections 1(a)(1) and 2(d) of the Trademark Act of 1946.

Some applicants and attorneys, instead of using the wording emphasized above, are still using the now obsolete wording "as might be calculated to deceive" which was promulgated in the forms under the Trademark Act of 1905 and inadvertently continued by the Act of 1946 up to October 1962 in Section 1(a)(1) and in the forms connected with the Act. Section 1(a)(1) of the 1946 Act was amended by Act of October 9, 1962 (Public Law 772, 87th Congress, 76 Stat. 769) to conform it to the language of Section 2(d) of the 1946 Act, since the language of Section 2(d) reflects the thinking at the time the 1946 Act was written. The wording of the trademark forms for the 1946 Act has also been amended appropriately.

It is desirable that proper wording be used. However, since the differences in wording referred to above are considered to be differences of form rather than of substance. Examiners will not require new verifications or declarations. When the obsolete wording is observed and a letter is to be written for other reasons, Examiners will at that time call attention to the fact that the wording is obsolete and should be modified in applications in the future.

RENE D. TEGTMEYER,
Mar. 25, 1974. *Assistant Commissioner for Trademarks.*

[921 O.G. TM 186]

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(130) **Rules Service Company Address Change**

The Patent and Trademark Office has been notified of a change in the address and telephone number of the Rules Service Company which publishes a looseleaf Rules of Practice in Patent and Trademark Cases with a revision service. The new address and telephone numbers are:

Rules Service Co.
4341 Montgomery Ave.
Bethesda, Md. 20014
(301) 656-4660

SIDNEY A. DIAMOND,
Apr. 7, 1980. *Commissioner of Patents and Trademarks.*

[994 O.G. 10]

Late-Filed Renewal Fees

Sections 9 and 31 of the Lanham Act (15 U.S.C. §§1095 and 1113) require that an additional five dollar ($5.00) fee be submitted by a registrant who files a renewal application during the three-month period following expiration of its registration. The language of the statute requires that this additional fee be submitted within the three-month grace period. A number of registrants who have failed to submit the additional fee within the prescribed period have petitioned the Commissioner to allow their renewal applications. The Commissioner has granted petitions of this kind where the registrant or its attorney maintained a Patent and Trademark Office deposit account which contained, on the date the renewal application was filed, sufficient funds to cover the additional fee. Specifically, the Commissioner has exercised discretion under Trademark Rules 2.146(a)(3) and 2.147 to deem the authorizations to charge the deposit accounts to have taken place at the time the registrants filed their renewal applications, even though the authorizations were not confirmed until a later date. This Office policy was established by the Commissioner's decision in *In re Ralston Purina Co.*, 191 USPQ 154 (Comr. Pats. 1976).

The policy established by the *Ralston Purina* decision is being changed. Henceforth, the Commissioner will no longer exercise discretion to charge deposit accounts *nunc pro tunc* for trademark renewal application fees. To allow an authorization to charge a deposit account to relate back to a date on which no actual authorization existed is, in effect, to allow late payment. It is inequitable to permit those registrants who have deposit accounts (or those whose attorneys have such accounts) to make late payment of renewal fees, while those without deposit accounts may not.

Petitions relying on *Ralston Purina* will, after the date of this notice, be denied, unless the events that gave rise to those petitions occurred before publication of this notice.

MARGARET M. LAURENCE,
Feb. 20, 1981. *Assistant Commissioner for Trademarks.*

[1004 O.G. 29]

Single Copies of the Trademark Official Gazette

Members of the public ordering single copies of the Trademark Official Gazette from the Superintendent of Documents are reminded they must specify the date of the issue being ordered.

The date of the issue in which a mark will be published for opposition is shown on The Notice of Publication form mailed to applicants approximately two weeks before the publication date. This date must be included on each single copy order.

Orders received without an issue date may be filled from current weekly stock. The Superintendent of Documents cannot check on whether a particular mark is published in the issue then in stock. If the stock is exhausted at the time the order is received, the order will be returned unfilled.

MARGARET M. LAURENCE,
Mar. 3, 1981. *Assistant Commissioner for Trademarks.*

[1004 O.G. 36]

Consolidated Certificates Under Trademark Rule 2.88

Trademark Rule 2.88 provides as follows:

Applications may be consolidated.

a. When several applications have been filed by the same applicant for registration on the same register of a mark shown in identical form on the drawings for goods and/or services in different classes and each of the applications has been allowed, a single certificate based on such applications may be issued. A request for the issuance of a consolidated certificate must be made of record in each of the applications involved prior to the allowance of any of the applications.

b. The issuance of any original certificate may be suspended upon request of the applicant for a period not exceeding 6 months, to permit such consolidation.

The resulting certificate of registration is known as a consolidated certificate.

Because Rule 2.88 is seldom invoked and because the issuance of consolidated certificates entails undue administrative effort, the Patent and Trademark Office will soon be publishing for comment a proposal to eliminate the rule.

In the meantime, any applicant seeking registration of a single mark for more than one class of goods and/or services is encouraged to use the multiple-class application procedure set forth in Trademark Rule 2.87, rather than the consolidated application procedure set forth in Trademark Rule 2.88.

MARGARET M. LAURENCE
Assistant Commissioner for Trademarks.

July 29, 1981

[1009 O.G. 17]

[1] These estimated costs will be partially offset by fees to the same extent as under our national system.

[2] Assumes additional publication of all applications will be required (see discussion of Sections 9 and 10 of bill in the Sectional Analysis).

[3] Includes supervisory, professional and clerical personnel, and mail.

[4] Includes Legislation and International staff, Organization and Systems, and all travel.

[5] Only travel remains.

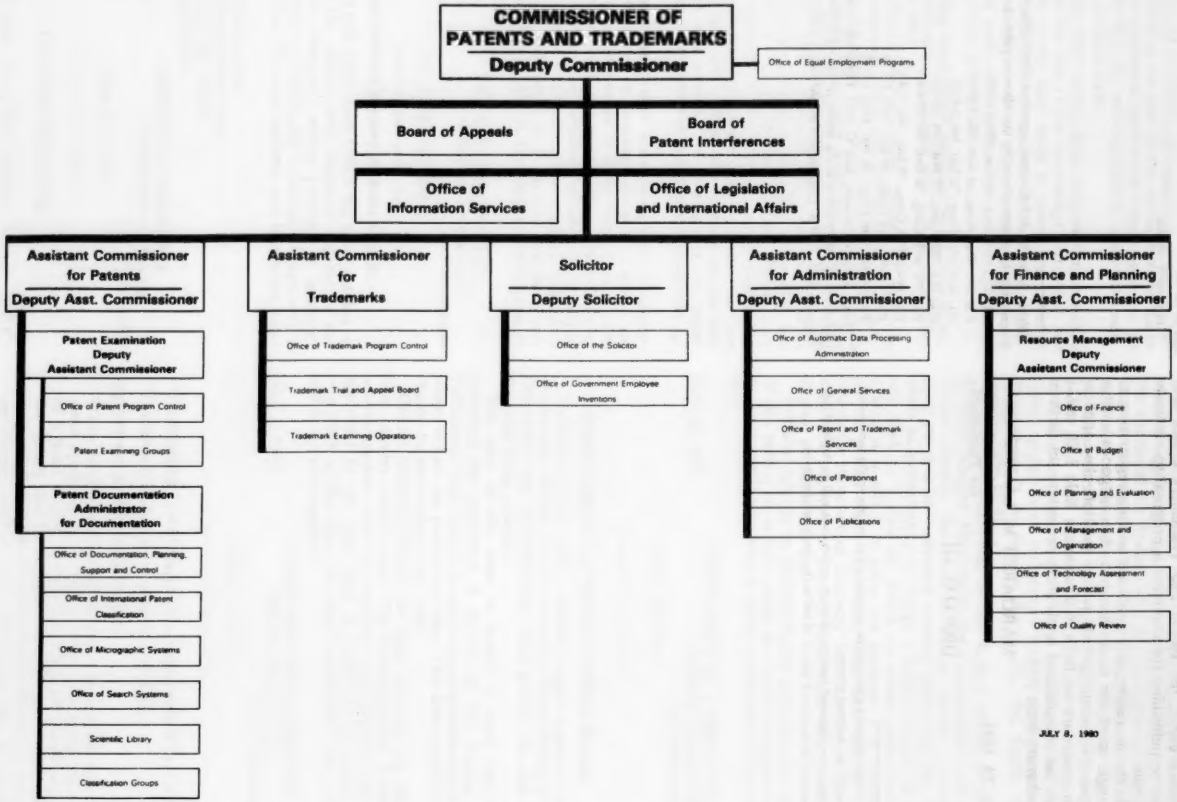
[1] Public Law 489, 79th Congress, approved July 5, 1946; 60 Stat. 427. Amendments have been effected by the following public laws.

P.L. 710, 81st Cong., 64 Stat. 459, 8-17-50.
P.L. 593, 82nd Cong., 66 Stat. 792, 7-19-52.
P.L. 609, 85th Cong., 72 Stat. 540, 8-8-58.
P.L. 333, 87th Cong., 75 Stat. 748, 10-3-61.
P.L. 772, 87th Cong., 76 Stat. 769, 10-9-62.
P.L. 89-83, 89th Cong., 79 Stat. 260, 7-24-65.
P.L. 93-596, 93rd Cong., 88 Stat. 1949, 1-2-75.
P.L. 93-600, 93rd Cong., 88 Stat. 1955, 1-2-75.

[2] Done at Vienna, Austria, June 12, 1973. This is the Treaty which was transmitted by the President to the Senate for advice and consent to ratification on Sept. 3, 1975. *Congressional Record Sept. 3, 1975, S. 15139.*

Attachment to DOO 30-38

U.S. DEPARTMENT OF COMMERCE
Patent and Trademark Office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JULY 8, 1980

TELEPHONE DIRECTORY

General Information ..... (703) 557-3080

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Commissioner, Gerald J. Mossinghoff 3071
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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT, consult Chapter 1800 of the Manual of Patent Examining Procedure and notices 90–95 in the consolidated listing of notices appearing in the Official Gazette of Jan. 6, 1981.

The PCT fees in effect after May 19, 1981 are as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Basic Fee (for the first 30 sheets of an international application)	215.00
Basic Supplemental Fee (for each sheet over 30)	4.00
International Designation Fee (for each State for which a national patent is sought, or group of States for which the same regional patent is sought)	50.00

RENE D. TEGTMEYER,
Assistant Commissioner for Patents.

Board of Appeals Decisions Rendered in the Month of Nov. 1981

Affirmed	159
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REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

D. 258,252, Re. S.N. 290,139, Filed Oct. 8, 1981 Cl. D00, SUPPORT STAND FOR HANGING SEAT OR SIMILAR ARTICLE, Phillip A. Gass, Owner of Record: *Inventor,* Attorney or Agent: None, Ex. Gp.: 290

3,873,641, Re. S.N. 309,973, Filed Oct. 9, 1981, Cl. 525/133, MOULDING COMPOSITIONS CONTAINING A MIXTURE OF A THERMOPLASTIC AROMATIC POLYCARBONATE, A BUTADIENE POLYMER AND A COPOLYMER BASED ON ETHYLENICALLY*, Dieter Margotte, et al., Owner of Record: *Bayer Aktiengesellschaft, Leverkusen, Germany,* Attorney or Agent: Nicholas E. Oglesby, Ex. Gp.: 143

4,123,841, Re. S.N. 311,276, Filed Oct. 14, 1981, Cl. 029/570, ELECTROCHROMIC DISPLAY DEVICE MANUFACTURE METHOD, Kozo Yano, et al., Owner of Record: *Sharp Kabushiki Kaisha, Osaka, Japan,* Attorney or Agent: Terrell C. Birch, et al., Ex. Gp.: 111

4,165,832, Re. S.N. 296,750, Filed Aug. 27, 1981, Cl. 229/54R, THERMOPLASTIC BAGS, Milton C. Kuklies, et al., Owner of Record: *Mobil Oil Corp., New York, N.Y.,* Attorney or Agent: Charles A. Huggett, et al., Ex. Gp.: 241

4,197,178, Re. S.N. 295,688, Filed Aug. 24, 1981, Cl. 204/255, BIPOLAR SEPARATOR FOR ELECTROCHEMICAL CELLS AND METHOD OF PREPARATION THEREOF, Placido Maria Spaziante, et al., Owner of Record: *Oranzio deNora Impianti Elettrochimici S.P.A., Milan, Italy,* Attorney or Agent: Charles A. Muserlian, Ex. Gp.: 116

4,229,591, Re. S.N. 293,932, Filed Aug. 18, 1981, Cl. 560/193, PROCESS FOR PREPARING A DIESTER OF OXALIC ACID IN THE GASEOUS PHASE, Kenji Nishimura, et al., Owner of Record: *Ube Industries, Ltd., Tokyo, Japan,* Attorney or Agent: Eugene Sabol, Ex. Gp.: 126

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

Re. 29,285, Reexam. No. 90/000,120, Requested: Dec. 3, 1981, Cl. 428/426, METHOD FOR CONCOMITANT PARTICULATE DIAMOND DEPOSITION IN ELECTROLESS PLATING, AND THE PRODUCT THEREOF, Theodore Peter Christini, et al., Owner of Record: *E.I. Du Pont de Nemours & Co.,* Attorney or Agent: Harry J. McCauley, Ex. Gp.: 164, Requester: Elektroschmelzwerk Kempten GmbH, Fed. Republic of Germany

3,381,046, Reexam. No. 90/000,115, Requested: Nov. 27, 1981, Cl. 42/94, JET AND ROCKET FUEL, Charles A. Cohen, et al., Owner of Record: *Esso Research Engineering Co.,* Attorney or Agent: Michael Conner, Ex. Gp.: 221, Requester: J. Edward Hess, Sun Tech., Inc., Radnor, Pa.

4,065,366, Reexam. No. 90/000,121, Requested: Dec. 3, 1981, Cl. 204/98, PROCESS FOR PRODUCING ALKALI METAL HYDROXIDE, Yoshio Oda, et al., Owner of Record: *Asahi Glass Co., Ltd., Tokyo, Japan,* Attorney or Agent: Oblon, Fisher, Spivak, McClelland & Maier, Ex. Gp.: 116, Requester: Birch, Stewart, Kolasch & Birch, Falls Church, Va.

4,083,229, Reexam. No. 90/000,118, Requested: Dec. 2, 1981, Cl. 73/40.5A, METHOD AND APPARATUS FOR DETECTING AND LOCATING FLUID LEAKS, Allen R. Anway, Owner of Record: *Plaunt & Anderson Co., Inc., Duluth, Minn.,* Attorney or Agent: Leblanc, Nolan, Shur & Nies, Ex. Gp.: 240, Requester: Plaunt & Anderson Co., Inc., Duluth, Minn.

4,196,979, Reexam. No. 90/000,117, Requested: Nov. 30, 1981, Cl. 351/7, METHOD AND DEVICE FOR DETECTING DISTANCE BETWEEN EYE EXAMINING INSTRUMENT AND EYE, Yoshimi Kohayakaw, et al., Owner of Record: *Canon Kabushik Kaisha, Tokyo, Japan,* Attorney or Agent: David Toren, Esq., Ex. Gp.: 250, Requester: A. Yates Dowell Jr., Arlington, Va.

4,249,688, Reexam. No. 90/000,119, Requested: Dec. 2, 1981, Cl. 226/24, DEVICE FOR INTERMITTENT FEEDING OF WEBS, Gerhard Klemm, Owner of Record: *Inventor,* Attorney or Agent: Michael J. Striker, Ex. Gp.: 240, Requester: I. Irving Silverman, Silverman, Cass & Singer Ltd., Chicago, Ill.

Reorganization of Trademark Examining Operation

Introduction

The trademark reorganization announced in the *Official Gazette* of Sept. 22, 1981 (1010 TMOG 19) has been completed. The Trademark Examining Operation now comprises six examining divisions called "Examining Law Offices", each with its own clerical support staff. Each law office has its own telephone receptionists, clerks, and typists. Pending trademark applications are stored in the law offices in which they are being examined.

Many telephone numbers and room numbers have changed. Several examining attorneys and classes of goods and services have been transferred.

A directory of examiners, attorneys and other trademark employees is set forth below. The classes of goods and services assigned to the law offices are listed in the table in the *Official Gazette* which gives the oldest new and amended application dates. All correspondence and inquiries pertaining to a trademark application should indentify the law office and the examining attorney handling the application.

Additional information concerning the reorganization may be obtained by calling (703) 557-3881, or by visiting the Office of the Director of the Trademark Examining Operation, Room CP 2-3C06.

The Patent and Trademark Office believes the reorganization will enable it to provide better service to the public. Comments concerning the adequacy of services are invited. Comments should be addressed to Margaret M. Laurence, Assistant Commissioner for Trademarks, Box 5, Washington, D.C. 20231.

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Room CP 2-2C-08

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Donald Perritt, Supervisor 557-3325
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Room CP 2-3C-14

Dec. 7, 1981.

MARGARET M. LAURENCE,
Assistant Commissioner
for Trademarks.

Status of PTO Services

The following is an update of the status of PTO services as of Dec. 4, 1981:

Service Item	Performance Goal (Calendar Days)	Actual	Comment
Mail Processing & Delivery	4	3.5	
Filing Receipts:			
Patents	22	88	Reduction is being made possible through extensive overtime.
Trademarks	42	51	Increase due to renovation disruptions.
Patent Copies:			
Window Coupons	5	99% within 5 days 99% within 10 days	Based on a 3% random sample of completed orders.
Mail Coupons	15	95% within 6 days 99% within 10 days	
Letter Orders	20	95% within 15 days 99% within 20 days	
Certified Copies:			
Trademark Regs.	30	48	Improvements expected over next few months.
All other	Being established	95% within 15 days 99% within 20 days	Based on a 3% random sample of completed orders.
Trademark Search Room:			
Filing Drawings	21	37	Increase due to renovation disruptions.
Filing Reg. Certificates	3	30	
Patent Assignments	15	57	Due to staffing limitations.
Trademark Assignments	21	70	Due to staffing limitations.
Patent Official Gazette	Issue Date	On schedule	
Patent Grants	Issue Date	2.5 days late	Expected to be on schedule by the end of December.
Trademark Official Gazette	Issue Date	On schedule	
Trademark Registrations	Issue Date	21 days late	Mailings are delayed due to renovation disruptions.

Dec. 8, 1981.

RICHARD J. SHAKMAN,
Assistant Commissioner
for Administration.

TABLE OF OFFICIAL GAZETTE VOLUME NUMBERS: 1872 - 1981

A table which relates volume numbers of the Official Gazette comprising collections of weekly issues of that publication to the month and year of their publication has found good use in the Patent and Trademark Office and Patent Depository Libraries in a variety of applications. The need for such a table arises, in part, from the fact that Official Gazette volumes have not been uniformly numbered on a monthly basis over the 110 year history of that publication. From Jan. 1872 through June 1883, they were numbered on a semi-annual basis; from July 1883 through Dec. 1902, quarterly; from Jan. 1902 through Dec. 1908, bi-monthly; and, since Jan. 1909, the volume of issues for each month has been separately numbered. To fulfill the interest which has been expressed in this table, it is published below:

Calendar Table of Official Gazette Volume Numbers

Month-by-Month Volume Numbers: Jan. 1872 to Present

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1872*	1	1	1	1	1	1	2	2	2	2	2	2
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1908	132	132	133	133	134	134	135	135	136	136	137	137
1909*	138	139	140	141	142	143	144	145	146	147	148	149
1910	150	151	152	153	154	155	156	157	158	159	160	161
1911	162	163	164	165	166	167	168	169	170	171	172	173
1912	174	175	176	177	178	179	180	181	182	183	184	185
1913	186	187	188	189	190	191	192	193	194	195	196	197
1914	198	199	200	201	202	203	204	205	206	207	208	209
1915	210	211	212	213	214	215	216	217	218	219	220	221
1916	222	223	224	225	226	227	228	229	230	231	232	233
1917	234	235	236	237	238	239	240	241	242	243	244	245
1918	246	247	248	249	250	251	252	253	254	255	256	257
1919	258	259	260	261	262	263	264	265	266	267	268	269
1920	270	271	272	273	274	275	276	277	278	279	280	281
1921	282	283	284	285	286	287	288	289	290	291	292	293
1922	294	295	296	297	298	299	300	301	302	303	304	305
1923	306	307	308	309	310	311	312	313	314	315	316	317
1924	318	319	320	321	322	323	324	325	326	327	328	329
1925	330	331	332	333	334	335	336	337	338	339	340	341

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Month-by-Month Volume Numbers: Jan. 1872 to Present—Continued

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1926	342	434	344	345	346	347	348	349	350	351	352	353
1927	354	355	356	357	358	359	360	361	362	363	364	365
1928	366	367	368	369	370	371	372	373	374	375	376	377
1929	378	379	380	381	382	383	384	385	386	387	388	389
1930	390	391	392	393	394	395	396	397	398	399	400	401
1931	402	403	404	405	406	407	408	409	410	411	412	413
1932	414	415	416	417	418	419	420	421	422	423	424	425
1933	426	427	428	429	430	431	432	433	434	435	436	437
1934	438	439	440	441	442	443	444	445	446	447	448	449
1935	450	451	452	453	454	455	456	457	458	459	460	461
1936	462	463	464	465	466	467	468	469	470	471	472	473
1937	474	475	476	477	478	479	480	481	482	483	484	485
1938	486	487	488	489	490	491	492	493	494	495	496	497
1939	498	499	500	501	502	503	504	505	506	507	508	509
1940	510	511	512	513	514	515	516	517	518	519	520	521
1941	522	523	524	525	526	527	528	529	530	531	532	533
1942	534	535	536	537	538	539	540	541	542	543	544	545
1943	546	547	548	549	550	551	552	553	554	555	556	557
1944	558	559	560	561	562	563	564	565	566	567	568	569
1945	570	571	572	573	574	575	576	577	578	579	580	581
1946	582	583	584	585	586	587	588	589	590	591	592	593
1947	594	595	596	597	598	599	600	601	602	603	604	605
1948	606	607	608	609	610	611	612	613	614	615	616	617
1949	618	619	620	621	622	623	624	625	626	627	628	629
1950	630	631	632	633	634	635	636	637	638	639	640	641
1951	642	643	644	645	646	647	648	649	650	651	652	653
1952	654	655	656	657	658	659	660	661	662	663	664	665
1953	666	667	668	669	670	671	672	673	674	675	676	677
1954	678	679	680	681	682	683	684	685	686	687	688	689
1955	690	691	692	693	694	695	696	697	698	699	700	701
1956	702	703	704	705	706	707	708	709	710	711	712	713
1957	714	715	716	717	718	719	720	721	722	723	724	725
1958	726	727	728	729	730	731	732	733	734	735	736	737
1959	738	739	740	741	742	743	744	745	746	747	748	749
1960	750	751	752	753	754	755	756	757	587	759	760	761
1961	762	763	764	765	766	767	768	769	770	771	772	773
1962	774	775	776	777	778	779	780	781	782	783	784	785
1963	786	787	788	789	790	791	792	793	794	795	796	797
1964	798	799	800	801	802	803	804	805	806	807	808	809
1965	810	811	812	813	814	815	816	817	818	819	820	821
1966	822	823	824	825	826	827	828	829	830	831	832	833
1967	834	835	836	837	838	839	840	841	842	843	844	845
1968	846	847	848	849	850	851	852	853	854	855	856	857
1969	858	859	860	861	862	863	864	865	866	867	868	869
1970	870	871	872	873	874	875	876	877	878	879	880	881
1971	882	883	884	885	886	887	888	889	890	891	892	893
1972	894	895	896	897	898	899	900	901	902	903	904	905
1973	906	907	908	909	910	911	912	913	914	915	916	917
1974	918	919	920	921	922	923	924	925	926	927	928	929
1975	930	931	932	933	934	935	936	937	938	939	940	941
1976	942	943	944	945	946	947	948	949	950	951	952	953
1977	954	955	956	957	958	959	960	961	962	963	964	965
1978	966	967	968	969	970	971	972	973	974	975	976	977
1979	978	979	980	981	982	983	984	985	986	987	988	989
1980	990	991	992	993	994	995	996	997	998	999	1000	1001
1981	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1013
1982	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025
1983	1026	1027	1028	1029	1030	1031	1032	1033	1034	1035	1036	1037
1984	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049
1985	1050	1051	1052	1053	1054	1056	1057	1058	1059	1060	1061	1062

*** SUMMARY OF CHANGES IN VOLUME NUMBERING:**

Semi-annual:	*Jan. 1872 through Jun. 1883*
Quarterly:	*Jul. 1883 through Dec. 1902*
Bi-monthly:	*Jan. 1903 through Dec. 1908*
Monthly:	*Jan. 1909 to the present*

The *Official Gazette* was published on successive Wednesdays from 3 Jan. 1872 through 17 Jan. 1872. From 23 Jan. 1872 to the present, it has been published weekly on Tuesday.

PATENT NOTICES

Certificates of Correction for the Week of Jan. 5, 1982

Re. 30,738	4,256,836	4,280,960	4,290,188
Re. 30,743	4,258,494	4,281,390	4,290,543
3,894,000	4,260,743	4,282,177	4,291,094
3,941,005	4,260,861	4,283,556	4,292,120
3,996,184	4,261,916	4,283,658	4,292,245
4,014,932	4,263,444	4,283,963	4,293,100
4,020,044	4,265,247	4,284,134	4,293,170
4,026,842	4,267,123	4,284,366	4,293,437
4,108,835	4,268,606	4,284,779	4,293,541
4,143,166	4,269,900	4,285,698	4,293,581
4,190,887	4,271,416	4,285,801	4,293,664
4,192,554	4,272,076	4,285,807	4,294,079
4,197,427	4,272,245	4,285,901	4,294,081
4,206,530	4,273,476	4,286,012	4,294,395
4,240,517	4,273,933	4,286,233	4,294,612
4,240,547	4,276,322	4,286,609	4,294,725
4,246,182	4,276,406	4,287,800	4,294,794
4,247,667	4,276,883	4,288,604	4,295,801
4,247,938	4,276,936	4,289,419	4,297,086
4,248,897	4,277,617	4,289,479	4,297,180
4,253,027	4,279,261	4,289,637	4,297,229
4,254,412	4,279,541	4,289,732	
4,255,414	4,279,835	4,289,858	

Disclaimers and Dedications

Re. 29,696.—*Charles L. D. Chin,* Avon; *Joseph R. Reilly,* Naugatuck; *L. John Berggren,* deceased, late of Simsbury by Edith O. Berggren, executrix, Simsbury, Conn. APPARATUS IMPROVEMENTS IN TEMPERATURE-CONDITIONING PARTS. Patent dated July 11, 1978. Disclaimer filed Nov. 9, 1981, by the assignee, *Monsanto Co.*

Hereby enters this disclaimer to claims 1, 3, 4, 16, 30, 31, 32, 33, 34, 35 and 36 of said patent.

3,373,650.—*Jospeh E. Killpatrick,* Minneapolis, Minn. LASER ANGULAR RATE SENSOR. Patent dated Mar. 19, 1968. Disclaimer filed Oct. 15, 1981, by the assignee, *Honeywell Inc.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

3,927,044.—*Larry R. Foster* and *Hans H. Kuhn,* Spartanburg, S.C. ALKALINE STABLE FUGITIVE TINTS. Patent dated Dec. 16, 1975. Disclaimer filed Nov. 2, 1981, by the assignee, *Milliken Research Corp.*

Hereby enters this disclaimer to the entire remaining term of said patent.

3,947,459.—*Penelope R. Pappas,* Akron and *Dane K. Parker,* Canton, Ohio. AQUEOUS PREPARATION OF SULFENAMIDES. Patent dated Mar. 30, 1976. Disclaimer filed Oct. 28, 1981, by the assignee, *The Goodyear Tire & Rubber Co.*

Hereby enters this disclaimer to claims 1 through 13 of said patent.

4,050,887.—*L. John Berggren,* Simsbury; *Charles L. D. Cin,* Avon; and *Joseph R. Reilly,* Naugatuck, Conn. METHOD AND APPARATUS FOR TEMPERATURE CONDITIONING PARTS. Patent dated Sept. 27, 1977. Disclaimer filed Nov. 9, 1981, by the assignee, *Monsanto Co.*

Hereby enters this disclaimer to claims 1, 4, 6, 7, 8, 9, 14, 15, 16, 17, 18, 19 and 20 of said patent.

4,208,578.—*Robert W. McLoughlin* and *Colin P. Nuttall,* Bangor, Northern Ireland. OPTICAL INSPECTION APPARATUS. Patent dated June 17, 1980. Discalimer filed Oct. 30, 1981, by the assignee, *Gallaher Ltd.*

Hereby enters this disclaimer to claims 1, 2, 5, 6 and 7 of said patent.

4,239,556.—*Harvey Ellis Cline,* Stanford, Calif.; *Thomas Richard Anthony* and *Harvey Donald Solomon,* Schenectady, N.Y. SENSITIZED STAINLESS STEEL HAVING INTEGRAL NORMALIZED SURFACE REGION. Patent dated Dec. 16, 1980. Disclaimer filed Oct. 29, 1981, by the assignee, *General Electric Co.*

Hereby enters this disclaimer to claims 1 through 5 inclusive of said patent.

4,288,103.—*Bernard J. Gallagher,* Mayfield; *Erling G. Wennerstrom* and *Mark R. Houdek,* Cleveland *Mark R. Houdek,* Cleveland and Laszlo Aliczky, Solon, Ohio. FLUID FITTING HAVING GRIPPING BASS MEANS FOR CHUCKING. Patent dated Sept. 8, 1981. Disclaimer filed May 7, 1981, by the assignee, *Cajon Co.*

The term of this patent subsequent to Jan. 20, 1995, has been disclaimed.

4,288,630.—*Allan Wissner,* Ardsley, and *Middleton Brawner,* Suffern, N.Y. 1-HYDROXYMETHYL-11, 15-DIHYDROXY-PROSTEN-1-OL-DERIVATIVES. Patent dated Sept. 8, 1981. Disclaimer filed Oct. 26, 1981, by the assignee, *American Cyanamid Co.*

The term of this patent subsequent to Sept. 22, 1998, has been disclaimed.

4,289,910.—*Allan Wissner,* Ardsley and *Middleton B. Floyd Jr.,* Suffern, N.Y. 1-HYDROXYMETHYL-PROSTEN-1-OL-DERIVATIVES. Patent dated Sept. 15, 1981. Disclaimer filed Oct. 27, 1981, by the assignee, *American Cyanamid Co.*

The term of this patent subsequent to Sept. 8, 1998, has been disclaimed.

4,291,175.—*Allan Wissner,* Ardsley and *Middleton B. Floyd, Jr.,* Suffern, N.Y. 1-HYDROXYMETHYL-11-DEOXY-15-HYDROXY-PROSTEN-1-OL-DERIVATIVES. Patent dated Sept. 22, 1981. Disclaimer filed Oct. 27, 1981, by the assignee, *American Cyanamid Co.*

The term of this patent subsequent ot Sept. 8, 1998, has been disclaimed.

3,803,332.—*Oscar E. Seiferth; Glenn M. Austin;* and *Donald L. Paul,* Madison, Wis. BACON PACKAGE. Patent dated Apr. 9, 1974. Dedication filed Oct. 5, 1981, by the assignee, *Oscar Mayer & Co., Inc.*

Hereby dedicates to the Public the entire remaining term of said patent.

4,036,927.—*Thomas J. Stolki,* West Springfield, Mass. PREPARATION OF MOLECULARLY ORIENTED CONTAINERS USING REHEAT PROCESS. Patent dated July 19, 1977. Dedication filed Nov. 9, 1981, by the assignee, *Monsanto Co.*

Hereby dedicates to the Public the entire remaining term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

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	Sacramento: California State Library	(916) 322-4572
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Illinois	Chicago Public Library	(312) 269-2814
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Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
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Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF November 28, 1981

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-23-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	12-06-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	9-15-80
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	11-14-80
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170— R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	9-17-80
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	8-08-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	6-11-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—VACANT Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	3-06-80
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240— A. L. SMITH, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	12-07-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	8-06-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director Industrial Arts; Household, Personal and Fine Arts.	3-14-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	4-23-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	6-04-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330— R. E. AEGERTER, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	3-17-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	10-22-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350— G. M. FORLENZA, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-17-80

Expiration of patents: The patents within the range of numbers indicated below expire during October 1981, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,151,329 to 3,154,786, inclusive

Plant Patents ..... Numbers 2,449 to 2,450, inclusive

PATENT EXAMINING CORPS

EDWIN D. TOTHACKER, Assistant Commissioner

WILLIAM KELDAY, Deputy Assistant Commissioner

DIRECTIONS OF PATENT APPLICATIONS AS OF November 28, 1921

DEFENSIVE PUBLICATIONS

PUBLISHED JANUARY 5, 1982

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T101,401
PROCESS AND APPARATUS FOR FORMING ELONGATE GLASS FIBER REINFORCED PRODUCTS

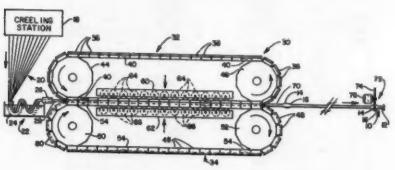
Earl M. Zion, 1138 Pierson Dr., Newark, Ohio 43055

Continuation of Ser. No. 12,253, Feb. 15, 1979, abandoned. This application Jul. 31, 1980, Ser. No. 174,097

Int. Cl.³ B29D *3/02*; B32B *17/04, 17/10*

U.S. Cl. 264—25

2 Sheets Drawing. 19 Pages Specification



The process and apparatus for continuously forming glass fiber reinforced products employs a preform produced by drawing continuous glass fibers through a resin bath and stripping die. This preform is then compressed during passage through an elongate molding zone. The molding zone is formed of two, articulated die cavity-containing tracks, the individual mold components of which join at the threshold of the zone to form an elongate, moving compression stage. This stage may be heated to carry out curing of the product during compression thereof.

T101,402
PROCESS OF PASTE EXTRUSION

Jeffrey R. Pateman, 74 Attimore Rd., Welwyn Garden City, Hertfordshire, England

Filed Oct. 29, 1980, Ser. No. 201,974

Claims priority, application United Kingdom, Nov. 19, 1979, 7939952/79

Int. Cl.³ D04N *1/64*

U.S. Cl. 264—127

No Drawing. 8 Pages Specification

Pipes with walls thicker than 4 mm are made by paste extrusion of PTFE powder in the presence of a lubricant. The extrusion is carried out at a reduction ratio below 20:1. The PTFE powder is a mixture of 80 to 99% by weight of coagulated dispersion grade PTFE and 20 to 1% by weight of PTFE having a median particle size less than 50 micrometers. The mixture is preferably a co-coagulation of the two forms of PTFE.

DEFENSIVE PUBLICATIONS

PUBLISHED JANUARY 5, 1982

REISSUES

JANUARY 5, 1982

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,840

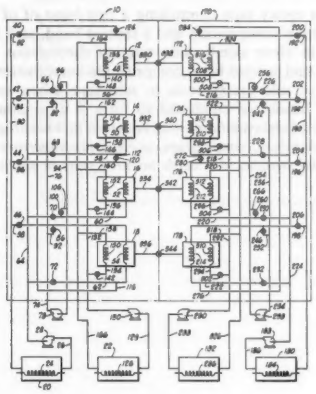
HYDROGEN-HYDRIDE ABSORPTION SYSTEMS AND METHODS FOR REFRIGERATION AND HEAT PUMP CYCLES

Lynn E. Terry, Bridgeton, N.J., assignor to MPD Technology Corporation, Wyckoff, N.J.

Original No. 4,055,962, dated Nov. 1, 1977, Ser. No. 715,231, Aug. 18, 1976. Application for reissue Jun. 4, 1979, Ser. No. 45,118

Int. Cl.³ F25B *15/00*; F01K *25/10*

U.S. Cl. 62—102 **11 Claims**



18. An absorption system including:

hydrogen

a first hydride-dehydride subsystem including first reactor means inclusive of a plurality of reactors;

a first hydridable material in said first reactor means for forming a first hydride by reaction with said hydrogen gas;

a second hydride-dehydride subsystem including second reactor means inclusive of a plurality of reactors;

a second hydridable material different from said first hydridable material in said second reactor means for forming a second hydride by reaction with said hydrogen gas;

means for periodically transferring said hydrogen gas between said first and second reactor means;

means for supplying heat to said first reactor means and said second reactor means in alternating sequence for effecting chemical compression and dehydriding of the hydrides of said first and second hydridable materials;

a conduit system interconnecting the reactors in each of said first and second reactor means;

pump means associated with each of said conduit systems for circulating a heat exchange fluid through each of said conduit systems between two of the reactors in each of said first and second reactor means at a time when one of said two reactors is undergoing activation of the hydridable material therein, and the other of said two reactors is undergoing deactivation of a hydride of the hydridable material therein.

means for removing heat from the reactor means in each of said subsystems.

Re. 30,841

MECHANISM FOR GAUGING THE CATCH WITHIN A TRAWL NET

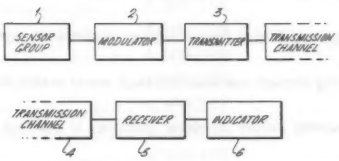
Kjell Ø. Ramberg, and Björn Kirknes, both of Horten, Norway, assignors to Simrad AS, Horten, Norway

Original No. 4,048,850, dated Sep. 20, 1977, Ser. No. 730,479, Oct. 7, 1976. Application for reissue Sep. 28, 1979, Ser. No. 80,111

Claims priority, application Norway, Oct. 8, 1975, 753403

Int. Cl.³ G01L *5/10*

U.S. Cl. 73—862.39 **8 Claims**



1. Apparatus for gauging the catch within a trawl net comprising:

at least one sensor disposed to sense a change in the [mask] *mesh* geometry of the trawl net and providing an output signal indicative of such change;

a modulator receiving the output signals from said sensor and in response thereto generating a modulated signal;

a transmitter coupled to said modulator for receiving the modulated signal and transmitting such signal;

a receiver detecting the transmitted signal as an indication of the state of said sensor; and

an indicator coupled to said receiver and providing an indication of the state of said sensor.

Re. 30,842

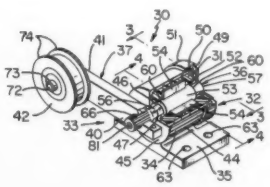
TENSIONING APPARATUS

Billy L. Speer, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Original No. 3,975,965, dated Aug. 24, 1976, Ser. No. 591,206, Jun. 27, 1975. Application for reissue Apr. 9, 1980, Ser. No. 138,766

Int. Cl.³ F16H *7/12*

U.S. Cl. 474—135 **33 Claims**



1. [A] *In a* tensioning apparatus for an endless power transmission belt comprising, an elastomeric material, means supporting said elastomeric material adjacent an associated power transmission belt, and means operatively connected between said elastomeric material and said power transmission belt by engaging said elastomeric material and said power transmission belt and employing the elastic properties of said elastomeric material to exert a controlled tensioning force

against said endless power transmission belt, *the improvement in which said means operatively connected between said elastomeric material and said belt comprises, shaft means disposed within and fixed against said elastomeric material, said shaft means comprising a shaft having at least one fin-like protrusion fixed thereto and extending radially therefrom, a lever having one end portion fixed to said shaft, and an idler roller engaging said power transmission belt and being carried on said lever, said elastomeric material being displaced from a normal relaxed condition thereof by said roller acting through said lever and shaft means so that the elastomeric material utilizes its elastic properties to transmit a force through said shaft means, lever, and roller to exert said controlled tensioning force against said belt.*

Re. 30,843

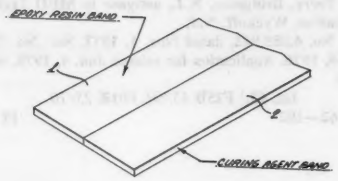
EPOXY TAPE

Theodore R. Flint, P.O. Box 513, Valley Forge, Pa. 19481

Original No. 3,837,981, dated Sep. 24, 1974, Ser. No. 303,146, Nov. 2, 1972. Continuation-in-part of Ser. No. 141,664, May 10, 1971, Pat. No. 3,708,379. Application for reissue Jun. 15, 1977, Ser. No. 806,923

Int. Cl.[3] B32B *27/38;* **C09J** *3/14, 3/16, 7/02*

U.S. Cl. 428—48 **10 Claims**



1. An epoxy tape comprising a first band of of an uncured epoxy resin composition and a second band, said bands being joined in close side-by-side relation throughout their entire length, said second band comprising a composition capable of curing of said epoxy resin in said tape when said first and second bands are combined to form a substantially uniform mixture *whereby said tape may be mixed by kneading and may be cured at ambient temperature, at elevated tempertures, and under water and remains in a stable uncured state in absence of kneading.*

PATENTS

GRANTED JAN. 5, 1982

ERRATA

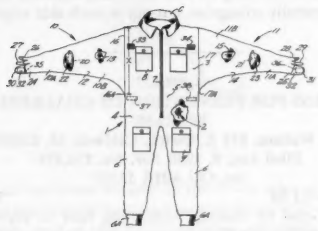
For CLASS	See PATENT NO.
229–528	4,308,995
501–056	4,309,217
501–032	4,309,218
501–032	4,309,219
376–192	4,309,249
376–310	4,309,250
376–446	4,309,251
376–290	4,309,252
518–705	4,309,359
204–017	4,309,455
071–108	4,309,562
331–172	4,309,675

PATENTS

GRANTED JANUARY 5, 1982

GENERAL AND MECHANICAL

4,308,622
THERMAL BODY SUIT
William F. Maddron, 1949 E. 28th, Eugene, Oreg. 97403
Filed Sep. 29, 1980, Ser. No. 191,668
Int. Cl.[3] A41D *13/02*
U.S. Cl. 2—79 **6 Claims**

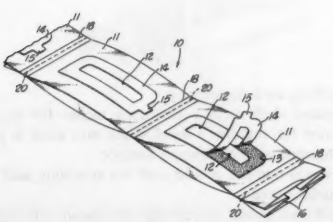


1. A garment for wear in abnormal temperature environments, said garment comprising,

a main body portion covering at least the upper torso of a wearer, and

sleeves integral with said main body portion each sleeve including a hand cover, said sleeves each defining a hand receiving permanent opening located at a point along the sleeve length and through which a wearer's hand may be extended, each sleeve attached to the main body portion of the garment by a shoulder seam the lower extremity of which is at the waist portion of the garment, an elastic normally closed cuff disposed about each of the sleeve defined openings to prevent the loss of body heat therethrough.

4,308,623
DISPOSABLE FLUID-TIGHT EAR PROTECTOR
Donna S. Voorhees, 3353 Rubio Crest Dr., Altadena, Calif. 91051
Filed Aug. 18, 1980, Ser. No. 178,864
Int. Cl.[3] A41D *21/00*
U.S. Cl. 2—174 **10 Claims**

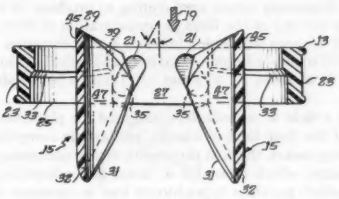


1. A fluid tight single use protector for the outer ear comprising:

a one-piece tubular enclosure of impervious flexible film material sealed closed at both ends and sized for assembly about a person's outer ear and fully closed except for a single opening in one sidewall to receive the outer ear; and

a layer of pressure sensitive adhesive applied to the exterior of said enclosure surrounding said single opening and effective to hold said enclosure sealed to a person's skull in a fluid-tight manner in an area surrounding the base of the outer ear.

4,308,624
HEART VALVE PROSTHESIS
Jerome J. Klawatter, New Orleans, La., assignor to Hemex, Inc., Austin, Tex.
Filed Aug. 7, 1979, Ser. No. 64,401
Int. Cl.[3] A61F *1/22*
U.S. Cl. 3—1.5 **19 Claims**



1. A heart valve prosthesis comprising an annular valve body having a central passageway for the flow of blood therethrough in a predetermined direction from upstream to downstream and

valve member means which is generally a section of a tube arcuate in transverse cross section having concave and convex surfaces and supported for substantially pivotal movement on eccentric axis means between a closed position blocking blood flow through said central passageway and an open position allowing blood flow therethrough, the convex surface thereof facing upstream in said closed position,

said valve member means including a pair of guides projecting in opposite directions which define the pivotal axis thereof,

said annular valve body having elongated depressions formed therein at generally diametrically opposite locations wherein said guides are received,

each of said elongated depressions extending for a longitudinal distance greater than its transverse dimension so that said guides move back and forth therealong at the same time they move pivotally therewithin thereby defining a shifting pivot axis relative to said valve body as said valve member means pivots from the closed to the open position wherein said concave surface thereof faces the centerline of said central passageway with the longitudinal axis of said tubular section being generally aligned with said passageway centerline and thereby opens up the center for normal blood flow therethrough.

4,308,625
ARTICLE FOR SANITIZING TOILETS
David J. Kitko, West Chester, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Division of Ser. No. 915,027, Jun. 12, 1978, Pat. No. 4,248,827. This application Aug. 18, 1980, Ser. No. 179,303
Int. Cl.[3] E03D *9/02*; A61L *2/16*
U.S. Cl. 4—228 **9 Claims**

1. An article of manufacture designed for placement in the water of the flush tank of a toilet, said article comprising two dispensing means, the first dispensing means containing a solid composition which is soluble in water and comprises a compound which provides hypochlorite ions in aqueous solution, and a second dispensing means containing a solid composition which is soluble in water and which contains a dye selected from the group consisting of those identified by Color Index numbers 24401, 42040 and Color Index name Basic Blue 80, said first dispensing means and second dispensing means each having a chamber for receiving water from the flush tank when said flush tank refills after a flush and for maintaining

said received water in contact with the respective solid compositions in said first and second dispensing means during the quiescent period between flushes so as to form concentrated solutions of said compositions in said respective dispensing means between flushes, said first dispensing means and second dispensing means each having means for retaining said concentrated solutions in substantial isolation from each other and from the body of water in the flush tank during the quiescent period between flushes, said first dispensing means and said second dispensing means each having means for releasing said concentrated solutions into the water in the flush tank when said water flows from the tank during flushing, said first and second dispensing means cooperating to produce, in the bowl water at the end of the flush, a concentration of from about 2 to about 30 ppm available chlorine, a concentration of from about 0.02 to about 2 ppm of said dye, an available chlorine:dye ratio of from about 2:1 to about 150:1, and a pH of about 6 to about 9.

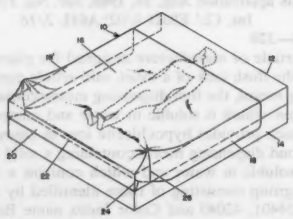
3. An article of manufacture designed for placement in the water of the flush tank of a toilet, said article comprising two dispensing means, the first dispensing means containing a solid composition which is soluble in water and comprises a compound which provides hypochlorite ions in aqueous solution, and a second dispensing means containing a solid composition which is soluble in water and which contains a water-soluble bromide salt and a dye selected from the group consisting of those identified by Color Index numbers 24401, 42040, 63010, 42085, 42675, and those having Color Index names Basic Blue 80, Reactive Blue 17 and Acid Blue 182; said first dispensing means and second dispensing means each having a chamber for receiving water from the flush tank when said flush tank refills after a flush and for maintaining said received water in contact with the respective solid compositions in said first and second dispensing means during the quiescent period between flushes so as to form concentrated solutions of said compositions in said respective dispensing means between flushes, said first dispensing means and second dispensing means each having means for retaining said concentrated solutions in substantial isolation from each other and from the both of water in the flush tank during the quiescent period between flushes, said first dispensing means and said second dispensing means each having means for releasing said concentrated solutions into the water in the flush tank when said water flows from the tank during flushing, said first and second dispensing means cooperating to produce, in the bowl water at the end of the flush, a concentration of from about 2 to about 30 ppm available chlorine, a concentration of from about 0.02 to about 2 ppm of said dye, an available chlorine: dye ratio of from about 2:1 to about 150:1, a concentration of bromide ion sufficient to catalyze the oxidizing action of the available chlorine and a pH of from about 6 to about 9.

4,308,626

FITTED TOP SHEET

Sidney M. Weiss, Greenwich, Conn., assignor to Sleep Knit Corporation, New York, N.Y.

Filed Jan. 30, 1981, Ser. No. 230,130
Int. Cl.³ A47G 9/02
U.S. Cl. 5—485 **9 Claims**



1. A fitted bedcover formed from a generally rectangular piece of material having a top edge, a bottom edge and two side edges, said bedcover having two fitted bottom corners, each formed by a first cut-out of said rectangular piece at the junction of one of said side edges and said bottom edge, each of said first cut-outs being joined along its cut edge to form one of said fitted corners, said bedcover having foot accommodating space when placed on a matress, said space having maximum matress to cover height spaced at a distance from the bottom edge of said matress, said space being formed by at least two tucks, one adjoining each of said material piece side edges, each of said tucks being formed by joining opposite edges of a second, generally triangular, cut-out in each side edge of said piece.

4,308,627

PROCESS FOR PREVENTION OF CHALKBROOD DISEASE

Melvin W. Wallace, 611 E. Ustick, Caldwell, Id. 83605

Filed Aug. 8, 1980, Ser. No. 176,478
Int. Cl.³ A01K 51/00
U.S. Cl. 6—12 M **7 Claims**

1. A process for treating leafcutting bees to prevent the spread of chalkbrood disease comprising the placing into the entrance of the bees' nesting hole a chemical agent from the sulfa drug class in such a manner that the bee must contact the chemical upon entering the hole.

4,308,628

ICE TOOL FOR MOUNTAINEERING

Walter R. A. Kunberger, and Wyatt Ball, both of 669 Wilshire Pl., Newbury Park, Calif. 91320

Filed Aug. 23, 1979, Ser. No. 69,095
Int. Cl.³ B25D 1/04
U.S. Cl. 7—145 **3 Claims**

1. A climbing tool comprising;
an elongated shaft having clearance means for providing clearance for the user's hand when said shaft is parallel and engaged with a climbing surface,
head means at one end of said shaft for attaching said tool to said surface, and
line attachment means operatively associated with said shaft for attaching a line to said shaft.

4,308,629

SAFETY HARNESS DEVICE

Margaret J. Freemon, 3118 Colyar Dr., Chattanooga, Tenn. 37404

Continuation-in-part of Ser. No. 953,874, Oct. 23, 1978, abandoned. This application Feb. 21, 1979, Ser. No. 13,419
Int. Cl.³ B63C 9/08
U.S. Cl. 9—336 **12 Claims**

1. A safety harness device for supporting a person in the water for swimming instruction, said device comprising:

a one-piece wide chest band adjustable in length, adapted to snugly surround the person's chest with its upper edge adjacent the arm pits of the person and its lower edge adjacent the waist of the person, and made of substantially non-stretchable material;

a pair of shoulder straps secured to the upper edge of the chest band and adapted to extend over the person's shoulders, each of said shoulder straps being adjustable in length;

a pair of leg straps secured to the lower edge of the chest band and adapted to extend around the person's legs at the crotch, each of said leg straps being adjustable in length; and

a vertically extending hand grip secured to the exterior of the back of said chest band at the center thereof which can be gripped by an adult to help control the person's movement in the water, the upper end of the hand grip being secured adjacent the upper edge of the chest band and the lower end of the hand grip being secured adjacent the lower edge of the chest band.

4,308,630

DEBURRING APPARATUS

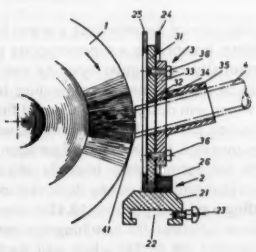
Rainer Schmidt, Rosmart 30, 5990 Altena 4, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 910,702, May 30, 1978, Pat. No. 4,216,060. This application Apr. 21, 1980, Ser. No. 142,191

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1979, 7911358[U]

Int. Cl.[3] **A46B** *13/02*

U.S. Cl. 15—21 D **8 Claims**



1. A protective guard and guide device for deburring the front faces of a workpiece in a deburring apparatus of the type having a rotating deburring tool and a workpiece holder disposed in front of the rotating tool, comprising:

adjustable plate retaining means mountable on said workpiece holder including an interchangeable generally upstanding protective guard and guide plate having an aperture through which the workpiece may be inserted, said plate retaining means also including a locking device for positively locking the same on said workpiece holder and a generally horizontally-extending base and two spaced-apart, generally vertically upstanding clamping plates having central apertures mounted on said base between which said protective guard and guide plate is inserted and releasably clamped therebetween.

4,308,631

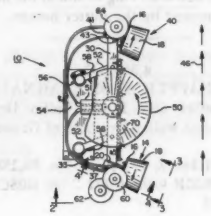
AUTOMATIC WHEEL WASHING APPARATUS

Daniel C. Hanna, 1133 SW. Rivington Dr., Portland, Oreg. 97201

Filed Jan. 4, 1980, Ser. No. 109,498

Int. Cl.[3] **B60S** *3/06*

U.S. Cl. 15—53 B **6 Claims**



1. In a wheel washer,

a rotary brush having bristles extending from a face thereof generally in a direction parallel to the axis of rotation thereof,

means for mounting the brush for movement pivotally from a normal position partially facing a wheel of a car movable along a predetermined path to a second position in which the brush face is substantially parallel to the side of the car, means biasing the brush toward said normal position, and

means carried by the mounting means in a position to be engaged by the car and movable thereby to move the brush from the normal position thereof to the second position thereof.

4,308,632

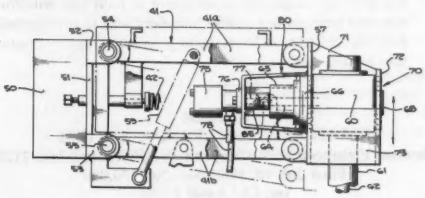
GUTTER BROOM ASSEMBLY FOR A STREET SWEEPING MACHINE

Donald L. Dickson, 1860 Arbolita Dr., La Habra, Calif. 90631, and Steven L. Dickson, 243 Long Branch Cir., Brea, Calif. 90621

Filed Oct. 1, 1979, Ser. No. 80,532

Int. Cl.[3] **E01H** *1/05*

U.S. Cl. 15—87 **4 Claims**



1. In a street sweeping vehicle having a main frame, a gutter broom disposed on one side of the vehicle, a gear box having an input shaft and having an output shaft extending downward and coupled to the gutter broom for both supporting and drivingly rotating the same, a side frame supported from the main frame for raising or lowering movements, a swivel mechanism carried by the side frame and pivotally supporting the gear box for movement about a horizontal axis extending longitudinally of the vehicle so that both the gear box and the gutter broom may pivot in a vertical plane extending substantially transverse to the direction of movement of the vehicle, and a motor having an output shaft drivingly coupled to the

input shaft of the gear box, improved power drive means comprising:

a housing for the motor;

a housing for the gear box;

means rigidly supporting the motor housing from the gear box housing;

means directly coupling the motor output shaft to the input shaft of the gear box in axial alignment therewith; and

flexible means coupled from the vehicle main frame to the motor housing for providing power to the motor;

the gear box and shafts serving to shield the motor from road shocks encountered by the gutter broom.

4,308,633

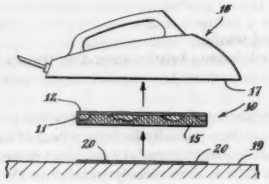
WAX APPLICATOR LAMINATE

Phillip L. Van Huffel, 6885 Forest Valley Dr., and Alex A. Bodner, 6914 Forest Valley Dr., both of Grand Rapids, Mich. 49508

Filed Jul. 2, 1979, Ser. No. 54,258

Int. Cl.³ B32B *9/06*; C09J *7/04*; B05C *1/06*

U.S. Cl. 15—104.93 **9 Claims**



1. A heat actuated wax applicator laminate for applying a thin, generally uniform coating of wax on a surface such as the bottom of a ski or the like by contacting the laminate with a heated surface, comprising:

a sheet of porous and absorptive cellulose material having a first side and a second side;

a layer comprising solidified wax, a portion of said solidified wax layer being absorbed by said porous and absorptive material to bind said solidified wax layer to said second side of said porous and absorptive cellulose material; and

a substantially continuous nonadherent barrier coating comprising resin bonded to said first side for being contacted with said heated surface, said nonadherent barrier coating being nonadhering to said heated surface and not becoming tacky at temperatures sufficient to melt said solidified wax and being impermeable to melted wax to substantially prevent melted wax from seeping therethrough to contact said heated surface.

4,308,634

BRUSH BRISTLE CLEANING SYSTEM

Abraham Eisenberg, 6604 Chippewa Dr., Baltimore, Md. 21209

Filed Jul. 18, 1980, Ser. No. 170,090

Int. Cl.³ A46B *17/06*

U.S. Cl. 15—142 **9 Claims**

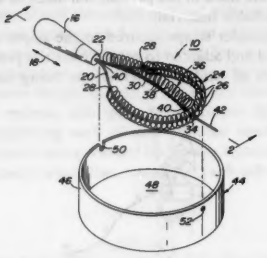
1. A brush bristle cleaning system including:

(a) a handle member extending in a longitudinal direction;

(b) a first wire element extending in an arcuate closed contour being secured to said handle member, said first wire element substantially defining a horizontal plane;

(c) a first helical wire element defining a plurality of first helical loops, said first wire element passing internal to said first helical wire element loops;

(d) a second wire element extending in said longitudinal direction, said second wire element being secured to said handle member on a first end thereof, said second wire element being fixedly secured to said first wire element on a second end thereof; and,



(e) a second helical wire element defining a plurality of second helical loops, said second wire element passing internal to said second helical wire element loops.

4,308,635

DEVICE FOR CONNECTING A WIPER BLADE HOLDER TO A WIPER ARM

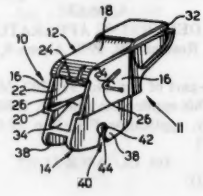
Guiseppe Maiocco, Rivoli, Italy, assignor to Arman S.p.A., Druento, Italy

Filed Mar. 26, 1980, Ser. No. 134,307

Claims priority, application Italy, Mar. 30, 1979, 67668 A/79

Int. Cl.³ B60S *1/40*

U.S. Cl. 15—250.32 **11 Claims**



1. A connecting device for attaching a wiper blade designed for a dorsal fitting, comprising a superstructure provided with a central substantially rectangular opening and with a transverse pivot pin in the portion corresponding to said central opening, to a wiper arm designed for a lateral fitting and comprising a connecting part at a free end portion, said connecting part having an inverted U-shaped configuration with parallel sides in which are formed two laterally aligned openings, characterized in that said connecting devices comprises a body (**10**,**10***a*) including a tubular portion (**12**,**12***a*), the cavity (**22**) of which has a form substantially matching the exterior form of said connecting part (**58**,**66**,**72**) when said part (**58**,**66**,**72**) is axially introduced into said tubular portion (**12**,**12***a*), the tubular portion (**12**,**12***a*) comprising two lateral walls (**16**), each wall having an inwardly angled lip with a detent (**28**) on a freely suspended inner end, each detent acting as a spring in a direction substantially perpendicular to said lateral walls (**16**) and projecting towards the interior (**22**) of said tubular portion (**12**,**12***a*), said detents (**28**) snapping into said laterally aligned openings (**60**,**68**) of said connecting part (**58**,**66**,**72**) of the wiper arm (**56**,**62**,**70**, said body (**10**,**10***a*) of the connecting device being further provided with a forked shaped portion (**14**,**14***a*) having means (**42**,**44**) capable of being snap-fitted onto the pivot pin (**54**) of the wiper blade in such a way that an articulated connection is realized between said body (**10**,**10***a*) and the wiper blade.

4,308,636

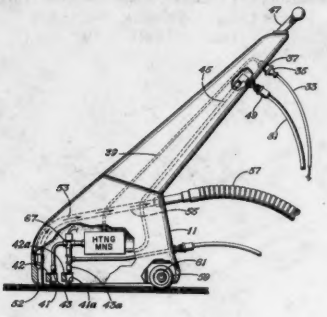
METHOD AND APPARATUS FOR HEATING A FLUID

John W. Davis, 3717 Guadalupe Rd., Fort Worth, Tex. 76116

Continuation-in-part of Ser. No. 809,296, Jun. 23, 1977, abandoned. This application Sep. 25, 1978, Ser. No. 945,450

Int. Cl.[3] A47L *11/34*

U.S. Cl. 15—321 9 Claims



1. Apparatus for cleaning floor surfaces, especially carpet, comprising:

a. a frame having a handle extending upwardly therefrom for facilitating movement of said frame about said floor surface;

b. a plurality of fluid nozzles carried by said frame in at least one row parallel to said floor surface and operational to spray fluid toward the floor surface;

c. heating means connected with and upstream of said fluid nozzles for heating the fluid flowed therethrough; said heating means being located within said frame and close to said fluid nozzles so as to have minimal heat loss; said heating means consisting essentially of primary and secondary coils disposed in annular concentric relationship with respect to each other and adjacent and in concentric relationship with respect to a core;

i. said primary coil having many more turns than said secondary coil such that said electromagnetic field efficiently builds and collapses through both said primary and secondary coils and introduces a much higher current flow in said secondary coil than in said primary coil; said primary coil having means for connecting with a source of current capable of effecting building and collaspsing of an electromagnetic field in said primary coil, and in said closely disposed secondary coil, and

ii. said shorted secondary coil comprising an electrical conductor in the form of an electrically conductive sheath adapted for conducting high current and having at least one fluid passageway defined therewithin for flowing said fluid adjacent said electrical conductor for transferring heat from said electrical conductor to said fluid for heating said fluid rapidly; said shorted secondary coil being shorted continuously within the length and breadth dimensions of said coil and said electromagnetic field so as to have lower resistance and higher current flows, and on infinite number of I^2R heat generators resulting in its higher heating and greater efficiency than if shorted exteriorly of said secondary coil; said primary coil and said shorted secondary coil being closely disposed adjacent each other such that substantially all of the flux of said electromagnetic field builds and collapses through both said primary and said secondary coils with resultant great efficiency in inducing electrical current to flow in and heat said shorted secondary coil and the fluid flowing therethrough, such that the I^2R heating occurs in both primary and secondary coils and contributes to heating the fluid flowing through said passageway in said shorted secondary coil;

d. a vacuum nozzle carried by said frame and positioned adjacent the floor surface opposite said fluid nozzles for extracting the heated fluid, dirt and the like from said floor surface;

e. conduit means in fluid communication with said fluid nozzles and heating means for supplying pressurized fluid thereto; and

f. means for supplying fluid under pressure to said conduit means.

4,308,637

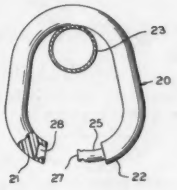
SHOWER CURTAIN HANGER

Robert D. Kucera, Barrington, Ill., assignor to Artway Manufacturing Co., Inc., Chicago, Ill.

Filed Nov. 29, 1976, Ser. No. 745,618

Int. Cl.[3] E05D *13/02*

U.S. Cl. 16—93 D 6 Claims



1. A one-piece hanger apparatus for suspending shower curtains below a horizontal rod member, said apparatus comprising:

an elongated torus member formed in a continuous geometric shape having an inside diameter sufficient in size so as to encircle said horizontal rod member,

said elongated torus member having incorporated therewithin said geometric shape an interruption at which a first end of said torus member meets a second end of said torus member,

said elongated torus member being constructed of a material substantially elastic to allow the deformation of said elongated torus member at said interruption to a distance greater than the diameter of said horizontal rod member, and having resilience to regain its original continuous geometric shape;

locking closure means located at said interruption,

said locking closure means comprising a post member emanating from said first end of said torus member and a cavity axially located within said second end of said torus member,

said post member capable of being alternatively fixedly received by said cavity and releasable therefrom, and

said post member of said locking closure means being insertable through a grommet of said shower curtain so as to support said shower curtain therefrom.

4,308,638

APPARATUS FOR SLAUGHTERING IN ACCORDANCE WITH HALLAL OR KOSHER PROVISIONS

Akiel Senussi, 6442 Northanna Dr., Springfield, Va. 22150

Filed Mar. 13, 1980, Ser. No. 130,001

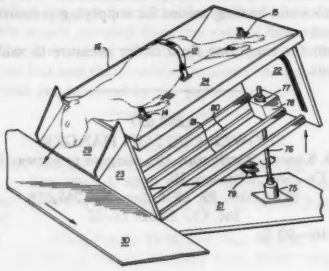
Int. Cl.[3] A22B *1/00*

U.S. Cl. 17—1 A 11 Claims

1. Apparatus for restraining an animal during slaughter according to hallal or Kosher provisions, the apparatus comprising:

a table top having a generally concave surface with a drain at the lowest point thereof through which the blood of the slaughtered animal drains; and

a plurality of spaced strapping means comprising straps each secured to the table at one end and each having a free end retained by individual releasable latching means wherein two of the straps are positioned for restraining the animal's legs, one strap is positioned for restraining the animal's



torso and one strap is positioned for restraining the animal's head; and

single operating means connected to the latching means for releasing simultaneously the latching means securing the animal after the animal has been slaughtered.

4,308,639

APPARATUS FOR REMOVING THE VERTICAL VERTEBRAE FROM THE NECK OF SLAUGHTERED FOWLS

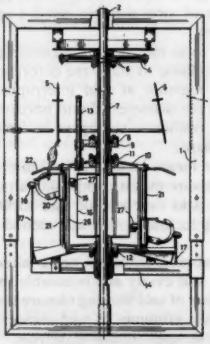
Martinus P. G. van Mil, Boxmeer, Netherlands, assignor to Stork PMT B.V., Netherlands

Filed Jun. 2, 1980, Ser. No. 155,435

Claims priority, application Netherlands, Jun. 12, 1979, 7904602

Int. Cl.³ A22C *21/00*

U.S. Cl. 17—11 **11 Claims**



1. Apparatus for removing the cervical vertebrae from the skin of the neck of slaughtered fowls which, hanging by the legs, are moved forward on a conveyor, comprising a frame movable along the track of the fowls, said frame bearing two cooperating clamping units slideable in vertical direction for drawing vertically downward a part of the neck clamped between them, said clamping units being made up of a fixed first clamping unit and a second clamping unit pivoting around a horizontal shaft, connected with a control unit which so cooperates with a guide with respect to which the frame is movable, that in a movement of the frame along the track the second clamping unit, starting from an open position in or near the upper position, is moved toward the first clamping unit, so that the clamping units enclose the neck of the fowl, and then are jointly moved downwardly.

4,308,640

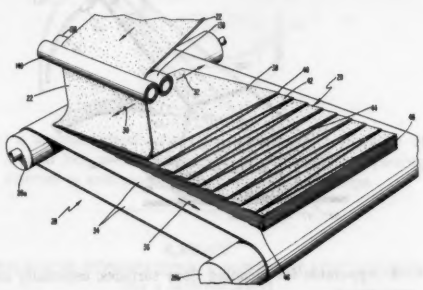
CROSS LAPPING APPARATUS

Jackie N. Bulla, and Billy B. Fesperman, both of Charlotte, N.C., assignors to Celanese Corporation, New York, N.Y.

Filed Mar. 8, 1979, Ser. No. 18,648

Int. Cl.³ D04H *11/04*

U.S. Cl. 19—163 **5 Claims**



1. Apparatus for cross-lapping a previously spread high denier tow of continuous filaments to create a controlled edge and controlled density batting therefrom, comprising: a frame; conveyor means under the frame for receiving the spread tow in the form of a batting; carriage means mounted for direct drive reciprocating movement on the frame transversely of the conveyor means and operable to deposit the spread tow on the conveyor means at a substantially constant rate; reversible motor means mounted on the frame, connected with the carriage means, and operable to reciprocate the carriage means relative to the conveyor means; and means for controlling the speed of said motor whereby a pre-selected lateral density gradation of the batting may be obtained as well as obtaining a precision batting edge.

4,308,641

U-SHAPED CLIP MADE FROM STRIP MATERIAL

Herbert Niedecker, Am Ellerhang 6, Königstein 2, Fed. Rep. of Germany (6240)

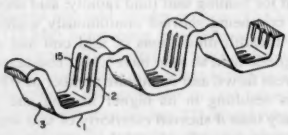
Continuation-in-part of Ser. No. 931,717, Aug. 7, 1978, Pat. No. 4,200,962, which is a continuation-in-part of Ser. No. 766,416, Feb. 7, 1977, abandoned. This application Sep. 13, 1979, Ser. No. 75,372

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1976, 2606658

The portion of the term of this patent subsequent to May 6, 1997, has been disclaimed.

Int. Cl.³ B65D *77/12*

U.S. Cl. 24—30.5 W **6 Claims**



1. In a U-shaped clip made from substantially flat strip material and intended to close bags and flexible tubes, said clip comprising a web connecting two limbs having outwardly angled end lugs, the improvement which comprises providing on the surface of the clip which is to engage a bag a pair of spaced parallel beads extending longitudinally along the outer

edges of the web and limbs, the material forming said beads being displaced inwardly from the outer longitudinal edges of the strip, and also providing in the surface of the clip which is to engage a bag a plurality of longitudinal parallel grooves in each limb and in the web, the grooves being discontinuous in that they are absent at the joinders between the limbs and web, the clip face opposite the grooved face being substantially flat, whereby such beads and grooves serve to grasp the bag more securely.

4,308,642

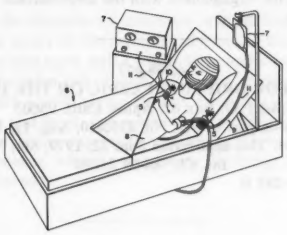
HOSPITAL UTILITY DEVICE

Arnold Heyman, 3573 Terrace View Dr., Encino, Calif. 91316

Continuation of Ser. No. 947,520, Oct. 2, 1978, abandoned. This application May 22, 1980, Ser. No. 152,194

Int. Cl.³ A44B *21/00*

U.S. Cl. 24—306 **11 Claims**



1. A device for holding one or a plurality of medically-related conduits in a secure fashion consisting essentially of a generally flat pad having grip means extending outwardly adjacent one end thereof for selectively joining said pad to a selected fabric-like surface, said grip means comprising first and second jaw members, and a generally flat, flexible strip of material joined to said pad adjacent one end thereof so as to extend across said pad from a position adjacent one end to a position adjacent the other end thereof, said strip of material adapted to be selectively joined to and removed from a surface of said pad thereby securing said conduits thereinbetween.

4,308,643

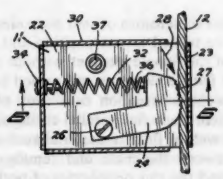
FISH STRINGER HOLDER

James J. Montplaisir, Route 2, Fargo, N. Dak. 58102

Filed Aug. 25, 1980, Ser. No. 180,672

Int. Cl.³ A01K *97/10*; F16G *11/00*

U.S. Cl. 24—132 R **5 Claims**



1. A device for restraining a flexible line such as a fish stringer, said device including:

A. a frame having a base plate and a shoulder plate perpendicular to the base plate;

B. jaw means pivotally mounted on said base plate in position to move on an arc approximately tangent to said shoulder plate in a first direction toward said shoulder plate and in a second direction away from said shoulder plate, said jaw means approaching said shoulder plate at least as close as the thickness of a line to be restrained;

C. mounting means for mounting said frame on an object; and

D. cover means including a cover parallel and spaced from said base plate and movable in direction parallel to the base plate between a closed position wherein said shoulder plate and said jaw means are covered and an open position wherein said shoulder plate and a portion of said jaw means adjacent said shoulder plate are uncovered.

4,308,644

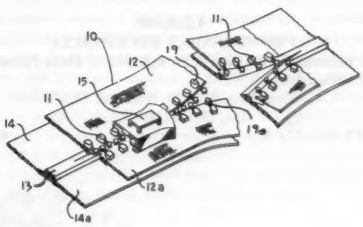
SEALING ZIPPER

Alexander M. Brown, 53 Twin Coach Ct., Daytona Beach, Fla. 32014

Filed Dec. 14, 1978, Ser. No. 969,304

Int. Cl.³ A44B *19/32*

U.S. Cl. 24—205.1 R **13 Claims**



1. A sealing zipper comprising a separable interdigitating chain composed of two interlocking halves having elements attached to flexible tapes and interlocked by a slider moving in one direction along said chain and separated by moving said slider in the opposite direction, said chain carrying a separable, impermeable gasket on one side, wherein the improvement comprises:

said slider being of single plate construction and having dependent flanges which engage said elements on the side opposite said gasket but do not penetrate between the interlocking portions of said elements, two of said depending flanges extending outwardly of said elements to force them together and one of said depending flanges extending downwardly sufficiently to engage upwardly projecting walls on said elements to retain said elements in co-planar relationship during interlocking.

4,308,645

SEPARABLE SLIDE FASTENER

Akira Hasegawa, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Oct. 1, 1979, Ser. No. 80,705

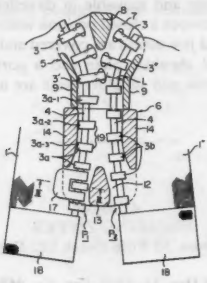
Claims priority, application Japan, Oct. 9, 1978, 53-138000

Int. Cl.³ A44B *19/36*

U.S. Cl. 24—205.11 R **8 Claims**

1. A separable slide fastener comprising a pair of stringers, a pair of pin members each secured at one end portion of one stringer, and a retainer for separably closing said pin members to each other, said retainer being a slidable one wherein the retainer can slide over both stringers and receive both pin members therein, said pin members being modified fastener elements formed by cutting the coupling heads off from some

normal fastener elements positioned at one end portion of each stringer, wherein the end surface of at least the modified fastener element adjacent the normal fastener elements of one pin member is tapered.

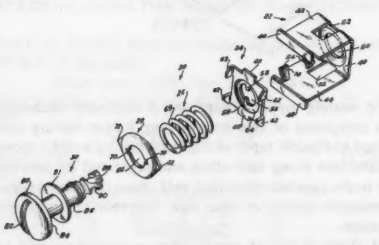


4,308,646

FRONT INSERT RECEPTACLE

Peter Schenk, West Islip, N.Y., assignor to Dzus Fastener Co., Inc., West Islip, N.Y.

Filed May 2, 1979, Ser. No. 35,395
Int. Cl.³ A44B *17/00*
U.S. Cl. 24—221 R **8 Claims**



1. A front insert receptacle for fastening two members together comprising:

a housing formed with a base and at least a pair of opposing legs extending from the peripheral portion of the base in the same direction and being separated from one another about the periphery of the base to provide spacing there between and being adapted to receive a stud therebetween;

a stop surface on the housing to engage with the upper surface of one member when the receptacle is partially extended through an opening therein;

rotational stop means on the housing to prevent rotation of the housing with respect to the one member when extended therein

a cam surface on the housing and a shiftable cam follower on the housing initially positioned so that the cam surface retains the cam follower when the housing is inserted in the opening of one member;

biasing means on the housing in engagement with the cam follower and initially biasing the cam follower against the cam surface and responsive to shifting of the cam follower with respect to the cam surface to a position out of engagement therewith whereupon the biasing member will direct at least a portion of the cam follower into engagement with the undersurface of the one member to retain the receptacle in position on the one member;

stud locking means on the housing adapted to engage with the stud after the housing has been mounted on the other member and inserted into the housing whereupon relative rotation of the stud with respect to the housing in one direction will activate the stud locking means and relative rotation of the stud with respect to the housing in a second direction will deactivate the stud locking means and permit the stud to be removed from the housing and the two members to be separated;

the housing being U-shaped in configuration with a pair of opposing spaced legs extending from the base;

the cam surface being at least one inwardly projecting tang extending inwardly from the inner surface of a leg, the undersurface of the tang forming the cam surface for engagement of the cam follower;

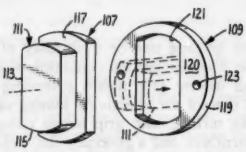
the cam follower being a rotatable plate having at least one protrusion extending from the peripheral surface thereof positioned so that the protrusion is located within the housing when the cam follower is in the initial position and when rotated with respect to the cam surface the protrusion will be extended outwardly from the legs of the housing for engagement with the undersurface of the one member.

4,308,647

CLIP FOR GRIPPING FABRIC OR THE LIKE

Robert E. Gillis, P.O. Box 67, Aptos, Calif. 95003

Continuation-in-part of Ser. No. 825,410, Aug. 17, 1977, Pat. No. 4,175,305. This application Jun. 22, 1979, Ser. No. 50,965
Int. Cl.³ A44B *21/00*
U.S. Cl. 24—245 R **8 Claims**



1. A fastener for attaching to a web of flexible material comprising in combination:

a. a rigid female element comprising a collar having a sidewall (136) forming a central opening of elongated shape and a flat outturned rim surface (133) surrounding said sidewall at a right angle thereto,

b. a rigid male element having a plug portion (125) which is complementary to the opening of said female element and having an outturned rim (127) extending around said plug, said outturned rim having a flat surface adapted to lie against the flat outturned rim surface of the female element,

c. the shape and dimensions of said male element being such that it can be turned in one position and passed through the collar of the female element without distorting either the male or female elements and turned back against said female element whereupon said rims of the male and female element lie in flat parallel configuration,

d. whereby a web of flexible material such as fabric can be grasped between the male and female elements, completely around the rim peripheries of both elements.

4,308,648

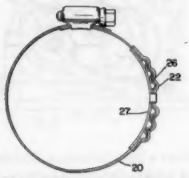
CONVOLUTED HOSE CLAMPS

Robert F. Fay, York, Pa., assignor to Murray Corporation, Cockeysville, Md.

Filed Mar. 31, 1980, Ser. No. 135,003
Int. Cl.³ B65D *63/02*; F16L *33/00*
U.S. Cl. 24—274 R **7 Claims**

6. In a hose clamp of the character adapted for use in an assembly comprising a clamp, hose and fitting, an open-ended band of generally circular configuration, the ends of which

overlap each other to vary the diameter of the band, means associated with said band which is yieldable in a direction circumferentially of the band and is displaced circumferentially from the area of said overlap, and has a spring-like quality or action such that the band is self-adjusting to compensate for or allow for thermal expansion and contraction of the assembly as well as for the aging of the hose, to thereby maintain a fluid tight seal between the hose and fitting, and means



for varying the diameter of said band, said last-named means comprising a series of circumferentially-spaced traverse slots in one end of said band, and a worm drive screw mounted for rotation in the other end of said band and in engagement with said slots, said screw having its axis extending substantially tangential to said band, and a secondary member attached to said band and having a spring-like quality similar to that of said first-named means, whereby to increase the spring rate of said first-named means.

4,308,649

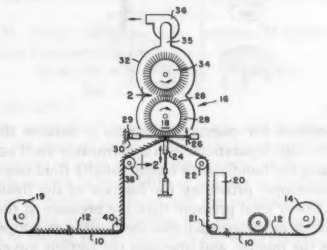
APPARATUS TO PATTERN BRUSH PILE FABRIC

Michael W. Gilpatrick, Chesnee, and Carroll L. Pack, Spartanburg, both of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Continuation of Ser. No. 22,521, Mar. 21, 1979, abandoned. This application May 12, 1980, Ser. No. 149,211

Int. Cl.³ D06C *23/02*

U.S. Cl. 26—2 R **1 Claim**



1. Apparatus to produce a patterned high-low pile fabric comprising: a pile fabric supply means, an elongated brush means having bristles thereon rotatably mounted in said apparatus, means to supply pile fabric from said fabric supply means to said brush means, means to heat the pile surface of the pile fabric as it is being supplied to said brush means, a plurality of individual reed members separately and pivotally mounted to said apparatus and projecting into the bristles and spreading a plurality of said bristles one from the other, vertically adjustable elongated bar means to urge the pile surface into and out of contact with the bristles of said elongated brush means whereby the portion of the pile surface adjacent said reed members will not be brushed by said bristles and means to take-up the pile fabric from the brush means and to allow the pile surface thereof to cool.

4,308,650

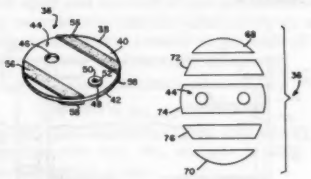
METHOD OF MAKING A MERCURY DISPENSER, GETTER AND SHIELD ASSEMBLY FOR A FLUORESCENT LAMP

Rafael J. Hernandez, Peabody; Thomas S. Yong, Danvers, and Tadius T. Sadoski, Salem, all of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Dec. 28, 1979, Ser. No. 107,984

Int. Cl.³ H01J *9/00, 61/26, 61/28*

U.S. Cl. 29—25.13 **2 Claims**



1. In a method of making a combination mercury dispenser, getter and shield for a fluorescent lamp, the steps comprising: forming a metallic member having a configuration compatible with the interior configuration of said lamp; cutting said member into a plurality of segments including two end segments and at least one internal segment; replacing said at least one internal segment with a coated segment comprising a strip of electrically conductive material having a configuration substantially matching said internal segment and having on one side thereof a mercury dispensing material and on the opposite side thereof a getter material; and attaching said end segments and said coated segments to form an integral shield.

4,308,651

CONTROLLED VARIABLE DEFLECTION ROLL

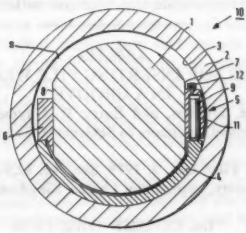
Valentin Appenzeller, Kempen, and Karl-Heinz Ahrweiler, Krefeld, both of Fed. Rep. of Germany, assignors to Eduard Küsters, Krefeld, Fed. Rep. of Germany

Filed Oct. 3, 1979, Ser. No. 81,328

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1979, 2905543

Int. Cl.³ B21B *13/02*

U.S. Cl. 29—116 AD **11 Claims**



1. A hydraulically controlled variable deflection roller adapted to be supported for rotation opposite a counter roll so as to apply a line of pressure at the nip formed between said deflection roll and said counter roll, comprising a rotative shell having an external rolling surface and a hollow cylindrical inside, a fixed shaft extending through said inside with a radial clearance space extending around the shaft; a pressure element for applying a force to the inside of said rotative shell at least in the area of said nip; and means operated by a fluid medium under pressure for applying a force to said pressure element, said means for applying disposed at the side of said fixed shaft at an angular position which is approximately 90° from the

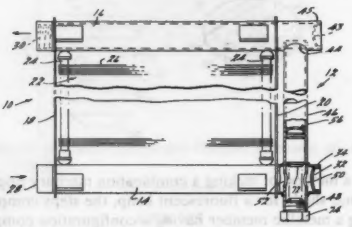
position of said nip, said means disposed so as to act between said pressure element and said fixed shaft.

4,308,652

HEAT EXCHANGER CONSTRUCTION

Ivan D. Woodhull, Jr., Flat Rock, Mich., assignor to Karmazin Products Corporation, Wyandotte, Mich.

Division of Ser. No. 876,669, Feb. 10, 1978, Pat. No. 4,209,062.
This application Feb. 21, 1980, Ser. No. 123,397
Int. Cl.³ B23P *15/26*
U.S. Cl. 29—157.4 **7 Claims**



1. A method of fabricating a heat exchanger having an integral pressure relief fluid by-pass conduit comprising:

fabricating an inlet header;

drilling first and second diametrically opposed by-pass openings adjacent one end of said inlet header with outwardly projecting collars surrounding each of said openings;

fabricating an outlet header;

forming a by-pass opening adjacent one end of said outlet header;

assembling a heat exchanger core assembly to said inlet header;

assembling said outlet header to said core assembly with said by-pass opening aligned with said inlet header diametric by-pass openings;

inserting a fluid by-pass conduit through said by-pass openings in said inlet header and inserting one end thereof into said by-pass opening in said outlet header;

brazing said fluid by-pass conduit to said inlet and outlet headers; and

installing a pressure relief valve within said fluid by-pass conduit intermediate said inlet and outlet headers.

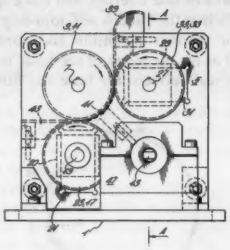
4,308,653

APPARATUS FOR INSERTING PILE WEATHERSTRIP IN A GROOVE

Kevin Hinton, Hitchin, and Barry R. Guymer, Biggleswade, both of England, assignors to Schlegel (UK) Limited, Seacroft, England

Filed Oct. 9, 1979, Ser. No. 82,920
Claims priority, application United Kingdom, Oct. 13, 1978, 40406/78
Int. Cl.³ B23P *19/02, 19/04*
U.S. Cl. 29—235 **12 Claims**

1. Apparatus for feeding an elongate flexible member, e.g. pile weatherstrip, into a groove in an elongated member, the apparatus comprising a frame, a pair of contra-rotating pile weatherstrip advancing rollers mounted on said frame and forming a first nip, a third pile weatherstrip advancing roller, means mounting said third roller on said frame so that it forms a further nip with one of the rollers of said pair, means to drive all of said rollers, means to guide the pile weatherstrip through said further nip of said rollers so as to increase the forces acting on the pile weatherstrip to advance it into the groove, means to guide the pile weatherstrip into and through said first nip of said pair of rollers, and an outlet guide downstream of the further nip of the third roller and one of said pair of rollers to receive the pile weatherstrip as it emerges therefrom, the arrangement being such that the groove in the elongated member can be aligned with said outlet guide to receive the advancing pile weatherstrip.

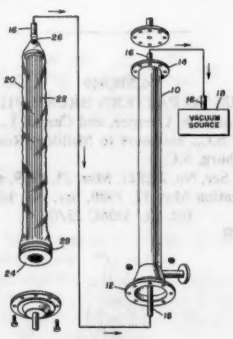


4,308,654

METHODS FOR ASSEMBLING PERMEATORS

Marlowe C. Bogart, Research Triangle Park, N.C., assignor to Monsanto Company, St. Louis, Mo.

Filed Sep. 24, 1979, Ser. No. 78,526
Int. Cl.³ B23P *11/02*
U.S. Cl. 29—451 **15 Claims**



1. A method for inserting a bundle of hollow fiber membranes for fluid separations into a permeator shell comprising surrounding the bundle with a substantially fluid impermeable, flexible envelope; providing the interior of the flexible envelope at a lower total pressure than the pressure at the exterior of the flexible envelope such that the flexible envelope laterally compacts the bundle; and inserting the flexible envelope containing the bundle into the permeator shell while maintaining the interior of the flexible envelope at a lower total pressure than the pressure at the exterior of the flexible envelope.

4,308,655

CASING FOR A MACHINE, WITH SEVERAL PARALLEL SCREWS, FOR TREATING MATERIALS

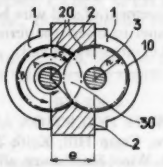
Pierre Berger, Saint-Etienne, France, assignor to Creusot-Loire, Paris, France

Filed Oct. 15, 1979, Ser. No. 84,655
Claims priority, application France, Oct. 16, 1978, 78 29370
Int. Cl.³ B21D *39/02*
U.S. Cl. 29—463 **2 Claims**

1. A process for the production of a casing for n parallel screws of a treatment machine, which screws penetrate into one another and are caused to rotate inside said casing, the internal wall of said casing comprising n adjacent cylindrical

sectors each subtending an angle A and having a radius r and each covering one said screw over that part of the periphery of said screw which is outside the zone of penetration of said screw, said process comprising:

producing n shells, each of which has an internal face in the



form of a cylindrical sector having a radius r and subtending an angle B, said angle B being less than said angle A;

producing n guide bars, each of which has two concave faces forming a V, each said concave face being in the form of a cylindrical sector having a radius r and subtending an angle

$$C = \frac{A - B}{2},$$

the axes of said concave faces being parallel and spaced apart by a distance equal to the distance between the axes of said screws;

connecting said guide bars to one another by means of joining members so that the axes of said concave faces coincide in pairs; and

fixing each shell to two guide bars so that the axis of the internal face thereof coincides with the axes of the corresponding concave faces of said guide bars, and so that the unit consisting of a respective said shell and of two adjacent said guide bars forms a cylindrical sector subtending an angle A.

4,308,656

METHOD OF MAKING INTERNALLY SLITTED STRIP MATERIAL

Richard H. Jenks, Sauquoit, N.Y., assignor to Revere Copper and Brass Incorporated, New York, N.Y.

Filed Jun. 13, 1979, Ser. No. 48,269
Int. Cl.³ B22D *11/126*
U.S. Cl. 29—527.7 **11 Claims**

1. In the method of making internally slitted strip material including the steps of casting a metal billet about friable elongated members of weld preventing material of flattened transverse cross-section of the widths of the slits to be formed in the strip material, rolling the billet and the elongated members of weld preventing material to thin and elongate the billet in the direction of rolling and to pulverize the weld preventing material into a fine weld preventing powder for distribution along the spaces occupied by the weld preventing material and which spaces upon the removal of the pulverized weld preventing material form said slits, and wherein upon said removal of said pulverized weld preventing material a residue thereof remains on the walls of said slits which residue is cathodic with respect to said metal billet whereby upon certain fluids flowing through said slits said residue causes corrosion of said internally slitted strip material due to galvanic action,

wherein the improvement comprises the steps of:

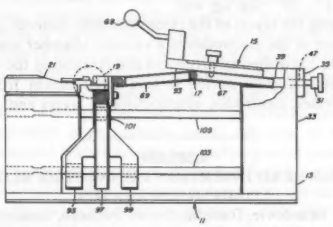
prior to casting said metal billet about said elongated members of weld preventing material, coating the outer longitudinally extending surfaces of said elongated members of weld preventing material by applying to said outer surfaces of said weld preventing material a coating in the range of 0.005–0.015 inch thick of a composition comprised by percent weight of borax 0.009%, bentonite 1.24%, Florida clay 4.3%, spar 46.4%, zinc oxide 3.0%, flint 15.5%, whiting 16.7%, ULTROX 11.9%, heating said coated material in a reducing atmosphere at a temperature in the range of 2200° F.–2600° F. for a period of time in the range of 6 to 10 hours, to cause said weld preventing material upon said rolling: (i) to pulverize more evenly and to distribute more evenly along said spaces occupied by the slits being formed thereby reducing any tendency of the pulverized weld preventing material to leave gaps at which welds are formed upon said rolling, and (ii) to prevent intimate contact between said walls of said slits and said elongated members of weld preventing material whereby upon said removal of said pulverized weld preventing material from said slits substantially no residue of said pulverized material remains on the walls of said slits and said corrosion is substantially eliminated.

4,308,657

CONNECTOR TERMINATING APPARATUS

John J. Anderton, Oil City, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Sep. 10, 1979, Ser. No. 74,189
Int. Cl.³ H01R *43/04*
U.S. Cl. 29—566.3 **3 Claims**



1. Apparatus for terminating a plurality of conductors to a connector of the type having first and second connector bodies adapted to have conductors interpositioned in a spaced array and in engagement with a plurality of electrical contacts, said apparatus comprising an elongated frame extending along a longitudinal direction, a fixture means at one end of said frame adapted to hold a first connector body and a plurality of conductors to be terminated, an upright member at the other end of said frame, a beam having a pivotable joint intermediate the ends thereof with one end pivotably mounted to said upright member, said frame including at least one rail extending in the longitudinal direction intermediate said upright and said fixture, a carriage pivotably mounted to the other end of said beam and slidably mounted to said rail for movement along said longitudinal direction away and toward said fixture member as said pivotable joint moves up and down in a direction substantially normal to said longitudinal direction, said carriage including means for holding and positioning said second connector body whereby said conductors are terminated to a connector in engagement with a plurality of electrical contacts during movement of said carriage toward said fixture.

4,308,658

ELECTROCHROMIC DISPLAY DEVICE MANUFACTURE METHOD

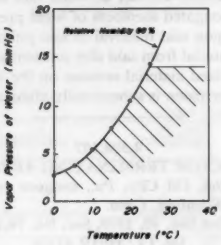
Kohzo Yano; Sadatoshi Takechi; Yasuhiko Inami, all of Tenri, and Hisashi Uede, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 926,087, Jul. 19, 1978, abandoned. This application Jan. 28, 1980, Ser. No. 116,244
Int. Cl.³ H01G *9/00*; G02F *1/01*
U.S. Cl. 29—570 **2 Claims**

1. A method for fabricating an electrochromic display device including two parallel substrates defining a cavity therebetween, electrodes formed on the respective substrates, layers

of electrochromic material disposed between the substrates, and an electrolyte disposed in the cavity defined by the substrates, said method comprising the steps of:

controlling the humidity of an environment to hold it below a relative humidity of 60% and, simultaneously, an absolute humidity of 1.17×10^{-2} kg/kg at those times when the humidity of the ambient environment would otherwise



exceed said relative humidity of 60% or absolute humidity of 1.17×10^{-2} kg/kg; and

depositing the layers of the electrochromic material onto the surface of the electrodes in a vacuum chamber positioned in said controlled environment and fabricating the electrochromic display device in said environment from said substrates, electrodes, electrochromic layers and electrolyte.

4,308,659

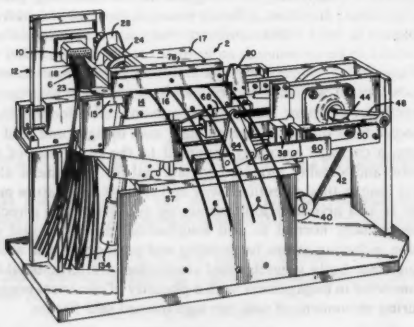
SINGLE LEAD INSERTION CONNECTOR BLOCK LOADING APPARATUS

Joseph E. Brandewie, Dunedin; Steven Feldman, Seminole, both of Fla., and Mark F. Jackson, Harrisburg, Donald N. Nyberg, Carlisle, Milton D. Ross, Harrisburg all of Pa. assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 21, 1980, Ser. No. 152,020

Int. Cl.³ H01R *43/00*

U.S. Cl. 29—748 **8 Claims**



1. Apparatus for inserting terminals on the leading ends of electrical wires into terminal receiving cavities in an electrical connector housing, said cavities extending inwardly from one face of said housing, said apparatus comprising:

connector housing supporting means for supporting said connector housing in a predetermined position,

guide means for guiding one of said wires axially therethrough, said guide means being disposed proximate to said housing, said guide means having one end spaced from said face of said housing and an other end substantially against said face, said guide means having a wire receiving tunnel extending from said one end to said other end, said tunnel having a cross section which is sufficient to permit free movement of said wire therethrough without significant lateral motion of said wire,

a pair of feed wheels on said guide means proximate to said one end thereof, said feed wheels being driven at the same speed but opposite directions, said feed wheels having means for engaging circumferential surfaces thereof to said wire on opposite sides of a single point thereon,

whereby the axial movement of said wire between said wheels and through said tunnel to insert the terminated end of said wire into one of said cavities is effected.

4,308,660

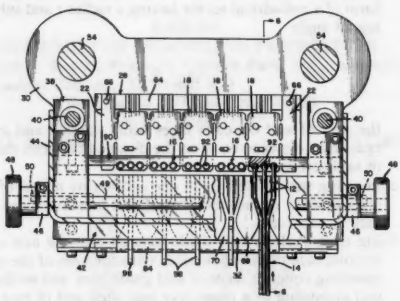
MULTIPLE WIRE INSERTION APPARATUS

Christopher K. Brown, Camp Hill; Keith Johnson, Jr., Manheim, and Donald A. Wion, Harrisburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 25, 1980, Ser. No. 143,696

Int. Cl.³ H01R *43/04*; B21F *1/02*

U.S. Cl. 29—749 **8 Claims**



2. Apparatus for guiding a plurality of wires to insertion stations where the wires are inserted into terminals comprises:

a guide plate having a wire-receiving end, an opposed terminating end, and a generally planar top surface lying therebetween, said top surface having a recess therein extending between said ends, said recess having a generally planar floor which generally parallels said top surface, said recess being bounded by lateral walls, said lateral walls and said floor defining a wire receiving opening at said wire-receiving end, said lateral walls converging to constrict said recess to a strait remote from said opening, said recess splitting into a plurality of channels between said strait and said terminating end, said channels being separated by one or more spacers, each spacer rising above the floor of the recess of the plane of the top surface, each spacer having opposed lateral surfaces which meet at a sharp leading edge adjacent to said strait and diverge between said leading edge and said terminating end, said lateral walls also diverging between said strait and said terminating end, said channels being of generally the same cross section throughout their length and likewise diverging between said strait and said terminating end, said channels terminating at ports which open on said terminating end,

a lid having a generally planar bottom surface arranged to close against said top surface of said guide plate to enclose said recess except at said wire receiving opening and said ports,

a like plurality of insertion stations adjacent to respective ports where terminals may be fixedly located adjacent to said ports,

means for terminating wires to said terminals, whereby,

a like plurality of side by side wires may be terminated to a like plurality of terminals by locating said terminals at said insertion stations, inserting said wires into said wire receiving opening and through said recess until said wires emerge from said ports

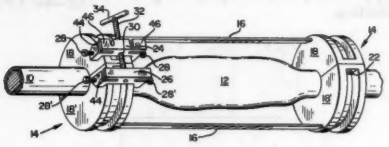
and pass over said insertion stations, said wires having been gathered into said strait then splayed into said channels, and terminating said wires said terminals.

4,308,661

TOOL FOR SEPARATING END CAP SECTIONS OF TELEPHONE CABLE SPLICE CASES

Olof A. Hallstrom, Jr., 1920 Hallstrom Rd., Tillamook, Oreg. 97141

Filed Apr. 7, 1980, Ser. No. 138,244
Int. Cl.³ B23P *19/04;* H01R *43/00*
U.S. Cl. 29—764 **7 Claims**



1. A tool for separating the bonded end cap sections of telephone cable splice cases, comprising:

(a) a pair of spreader blocks, one associated with each of a pair of adjacent end cap sections,

(b) means on each spreader block for releasably securing the latter to an end cap section, and

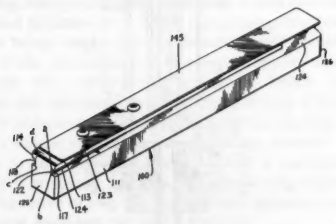
(c) means interconnecting the spreader blocks for moving the spreader blocks toward and away from each other.

4,308,662

METHODS OF AND APPARATUS FOR FORMING A METALLIC TAPE INTO A TUBE HAVING AN OVERLAPPED SEAM

William D. Bohannon, Jr., Lawrenceville, Ga., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Jun. 26, 1979, Ser. No. 52,165
Int. Cl.³ H01B *13/26;* B21D *39/02*
U.S. Cl. 29—828 **5 Claims**



1. A method of forming a corrugated metallic tape into a substantially circular tube having an overlapped seam, said method comprising the steps of:

moving successive increments of length of a corrugated metallic tape into engagement with a coverging, generally conically shaped surface to cause the successive increments to have at least a partially curved configuration with longitudinal edges of the successive increments being adjacent each other;

moving the successive increments having the at least partially curved configuration through a plurality of adjacent sequentially decreasing openings to cause the tape to have a generally circular configuration; then

providing confinement for longitudinal edge portions of the tape for at least a portion of a length of a path of travel along which they are to be formed into a seam to engage longitudinal edges of the tape, said step of providing confinement being accomplished substantially without encumbering an area enclosed by the metallic tape being formed into a tube; while

moving the successive increments of the tape along a path of travel with the confinement of the longitudinal edge portions being effective to form an overlapped seam having an underlying edge portion and an overlying edge portion which is directed inwardly into substantially continuous engagement with the underlying edge portion.

2. A method of wrapping a corrugated metallic tape about a cable core to enclose the core in a shield having a substantially circular configuration and having a preformed, overlapped seam, said method comprising the steps of:

advancing a cable core along a path of travel through a tube and a die;

moving successive increments of length of a corrugated metallic tape into engagement with a converging, generally conically shaped surface which is disposed about said tube to cause the successive increments to have at least a partially curved configuration with longitudinal edges of the successive increments being adjacent each other;

moving the successive increments having the at least partially curved configuration through a plurality of adjacent, sequentialy decreasing openings to cause the tape to have a generally circular configuration; then

providing individual confinement for longitudinal edge portions of the tape for at least a portion of the length of the path of travel along which they are formed into a seam to engage the longitudinal edges of the tape; while

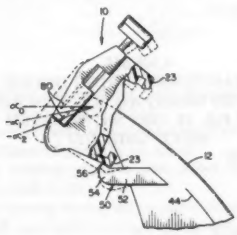
moving the cable core and the tape through the die along the portion of the path of travel with the confinement of the longitudinal edge portions being effective to form an overlapped seam having an underlying edge portion and an overlying edge portion which is directed inwardly into substantially continuous engagement with the underlying edge portion to preclude its protrusion into a plastic jacket which is substantialy extruded over the enclosed core.

4,308,663

RAZOR HANDLE WITH LATCH FOR PIVOTABLE CARTRIDGE

John T. Ciaffone, Bridgeport, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Dec. 31, 1979, Ser. No. 108,746
Int. Cl.³ B26B *21/52*
U.S. Cl. 30—87 **5 Claims**



1. In a shaving instrument including a razor handle making pivotal engagement with a razor blade cartridge, said razor blade handle comprising a vertical body portion adapted to be held by a shaver, said cartridge being freely rotatable through a predetermined arc, spaced arms extending upwardly from said body portion, said arms including means for pivotally engaging said blade cartridge, the improvement comprising:

automatic cartridge latching means extending from said handle and positioned for retaining said blade cartridge at a predetermined angular position when said blade cartridge is rotated beyond said arc, said latching means being flexible and resiliently deflectable upon contact with

said cartridge permitting said blade cartridge to rotate into and out of latching position by virtue of said flexibility, said handle being a unitary plastic member, said latching means defining a single cantilevered latching beam projecting from said handle, said blade cartridge including a camming surface for engagement with a cam follower and said handle further including a second cantilevered beam extending therefrom toward said cartridge camming surface and including a forward edge for camming engagement with said cartridge camming surface thereby urging said blade cartridge to a neutral position, both said beams being formed integrally with said handle to develop a single piece-part.

4,308,664

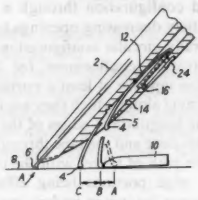
WRITING AID

Henry Morris, 8 Single Ave., Hutten Heights, Newcastle, Natal, South Africa

Filed Mar. 26, 1980, Ser. No. 134,312

Int. Cl.³ B43L *13/02*

U.S. Cl. 33—41 F **7 Claims**



1. A spacing device for use in conjunction with a ruler device as an aid to writing, comprising:

a writing implement having a writing point, a first restraint, a second restraint, and a resilient spacing member joined to said writing implement and configured to abut said first restraint and maintain under a first degree of pressure a predetermined distance between said writing point of said writing implement and an edge of said ruler device, said spacing member being movable under a second, increased degree of pressure to abut said second restraint to reduce the distance between said ruler device and said writing device by a predetermined amount thereby permitting a writer to align the bottoms of normal letters of a line of script and also allow the drawing of the lower strokes of depending letters.

4,308,665

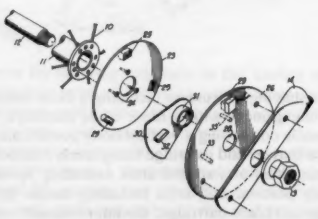
DISTANCE MEASURING DEVICE

Eugene R. Losch, 855 Hickory Ave. S.E., Palm Bay, Fla. 32905

Filed Feb. 19, 1980, Ser. No. 122,676

Int. Cl.³ G01B *3/12*

U.S. Cl. 33—141 E **4 Claims**



1. A distance measuring device comprising a wheel, a frame connected to the wheel to facilitate propelling the wheel over a surface, an electrically operated distance recorder on the frame, a relatively stationary magnetically operated switch connected with the frame and electrically coupled with said recorder, at least a permanent magnet connected with the wheel to rotate therewith and positioned to traverse said switch in a circular path of movement to cyclically activate the switch, the switch in turn activating said recorder, and a switch shielding element disposed between the switch and said magnet and being rotatably connected to said frame, the shield being driven in rotation by magnetic attraction, and cooperative stop means on the shield and connected with said frame to position the shield in active shielding relationship to the switch in response to propelling the device in one direction and to position the shield in an inactive non-shielding position relative to the switch responsive to propelling said device in an opposite direction.

4,308,666

LINEAR MICROMETER

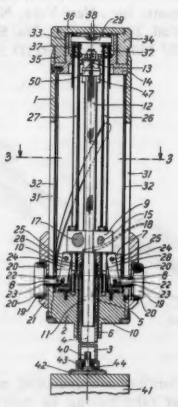
Herbert Hahn, Loehnberg; Hans-Dieter Jacoby, Asslar-Werdorf; Richard Jung, Solms-Albshausen, and Erich Schuster, Huettenberg, all of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed Jul. 16, 1979, Ser. No. 57,977

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1978, 2832038

Int. Cl.³ G01B *7/02*

U.S. Cl. 33—166 **18 Claims**



1. A linear micrometer comprising:

a cylindrically shaped housing;

a tube-shaped sleeve displaceably mounted for displacement along the longitudinal axis of said housing and extending from one end of said housing;

a measurement scale fixedly mounted along the longitudinal axis of said housing and slidingly supported inside said tube-shaped sleeve, and

a measurement readout means coupled to said tube-shaped sleeve for reading and displaying the relative position of said tube-shaped sleeve to said scale,

wherein a single point bearing connects said scale to the end of said housing opposite the end of said extending tube-shaped sleeve.

4,308,667

CONTINUOUSLY OPERATING MULTISTAGE DRYING INSTALLATION AND A PROCESS FOR CONTINUOUSLY DRYING A WORKPIECE

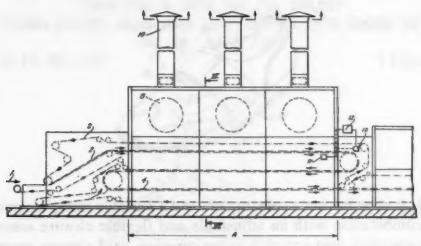
Friedrich Roos, Hauneck; Johannes Bolz, Bad Hersfeld, and Ingo Grebe, Neuenstein, all of Fed. Rep. of Germany, assignors to Babcock-BSH Aktiengesellschaft, Krefeld, Fed. Rep. of Germany

Continuation of Ser. No. 894,333, Apr. 7, 1978, abandoned. This application Feb. 28, 1980, Ser. No. 126,854

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1977, 2716086

Int. Cl.³ F26B *3/04*

U.S. Cl. 34—23 **5 Claims**



1. A process for continuously drying a laminated workpiece while maintaining the workpiece free from surface cracks, the process comprising the steps of providing separate multi-belt drier and one-belt drier for treating workpiece having two opposite, longitudinally extending surfaces and containing excess moisture; preliminarily drying the workpiece in said multi-belt drier by turning over the workpiece at least once so as to expose both of its surfaces to heat within said one drier, which turning during the preliminary drying does not lead to cracking of the workpiece since the latter contains excess moisture and thereby its surfaces are not brittle; transporting the preliminarily dried workpiece to said one-piece drier for final drying; finally drying the workpiece in said one-belt drier to a desired moisture level while maintaining the workpiece free from being turned over to thereby avoid cracking the surfaces of the workpiece due to pressure applied to the de-moisturized and consequently relatively brittle surfaces thereof, so that because of the preliminary drying of the workpiece with its turning in the multi-belt drier and the final drying of the workpiece without its turning in the one-belt drier a favorable drying efficiency is attained and a crackless dried workpiece is produced; and separately monitoring and regulating the respective drying temperatures and climates in each of said separate multi-belt and one-belt driers.

4,308,668

PROCESS FOR HEAT TREATMENT OF COAL

Yoshifumi Ito; Yoshihiko Nishimoto; Kiyomichi Taoda; Fumiaki Sato; Takashi Ueda, all of Hiroshima, and Seibi Uehara, Tokyo, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

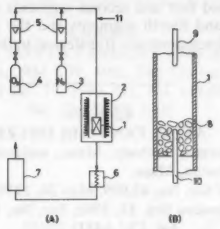
Filed May 30, 1980, Ser. No. 154,760

Claims priority, application Japan, Jun. 4, 1979, 54-68865

Int. Cl.³ F26B *21/10*

U.S. Cl. 34—30 **5 Claims**

1. A process for the heat treatment of highly hygroscopic coal having a low carbon content and high equilibrium moisture to produce a less hygroscopic coal which comprises rapidly heating the coal with hot gas at a rate of temperature rise of at least 100° C./min up to a final heating temperature in the range of 300°–500° C., and then rapidly cooling the same at a rate of temperature drop of at least 50° /min to not higher than



250° C., said hot gas comprising an inert gas with an oxygen concentration of not more than 4% by volume.

4,308,669

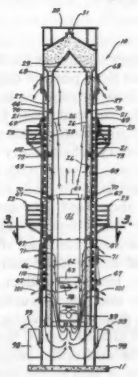
ADVANCED OPTIMUM CONTINUOUS CROSSFLOW GRAIN DRYING AND CONDITIONING METHOD

Ronald T. Noyes, and Eugene E. Williams, both of Frankfort, Ind., assignors to Beard Industries, Inc., Frankfort, Ind.

Division of Ser. No. 942,447, Sep. 14, 1978, Pat. No. 4,249,891. This application May 19, 1980, Ser. No. 151,288

Int. Cl.³ F26B *3/14*

U.S. Cl. 34—33 **2 Claims**



1. A method of conditioning grain to minimize drying damage utilizing apparatus including:

first and second vertical spaced air pervious walls for confining a column of grain to be dried;

means for causing grain to pass down said grain column between said walls;

means for causing drying air to pass through and across said first wall, and said column of grain, and said second wall, respectively;

said grain column including first, second, third and fourth vertically oriented width segments along the length thereof, said first segment being adjacent to and in contact with said first wall, said fourth segment being adjacent to and in contact with said second wall, said second segment being disposed between said first and fourth segments and adjacent the first segment but spaced from the fourth segment, said third segment being disposed between and in contact with the second and fourth segments; said method comprising:

a step at a first level of said grain column wherein the grain in the first segment is transferred to the second segment and the grain in the second segment is transferred to the first segment, while at the same time the grain in the third

and fourth segments are allowed to pass straight down undisturbed at that level; and

a step at a second level of said grain column wherein the grain in said first and second segments are transferred to the third and fourth segments and the grain in the third and fourth segments are transferred to the first and second segments.

4,308,670

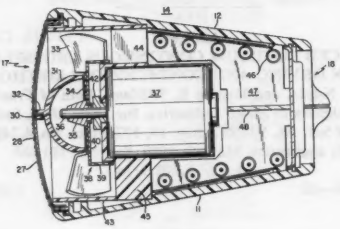
AXIAL FAN HAIR DRYER

James V. Bonnema, Peabody, Mass., assignor to The Gillette Company, Boston, Mass.

Continuation of Ser. No. 43,909, May 30, 1979, abandoned. This application Sep. 15, 1980, Ser. No. 187,611

Int. Cl.³ A45D *20/10*

U.S. Cl. 34—97 **7 Claims**



1. A portable hair dryer comprising a handle portion and an air flow portion, said air flow portion defining an air inlet and an air outlet, said air flow portion including a motor driven axial fan assembly wherein said axial fan is driven by said motor through a connecting motor shaft which passes through said axial fan, and stationary substantially air-impervious shield means for blocking the line of sight path to the portion of said motor shaft between said axial fan and said air inlet, said shield means being disposed about and substantially enveloping the portion of said motor shaft beyond said axial fan, an inlet structure mounted in said air inlet, said shield means including a mounting post around which loose hair, which gets through said air inlet structure, tends to collect, wherein said shield means is connected to said inlet structure at said mounting post, and collar means disposed between said axial fan assembly and said motor and affixed to said fan assembly for movement therewith wherein said collar means blocks the line of sight path to the portion of said motor shaft between said axial fan and said motor.

4,308,671

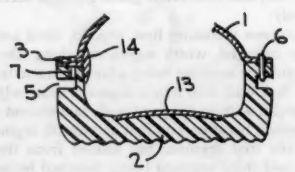
STITCHED-DOWN SHOE

Walter Bretschneider, Steinau-Neustall, Fed. Rep. of Germany

Filed May 23, 1980, Ser. No. 152,679

Int. Cl.³ A43B *3/14, 7/06, 9/10*

U.S. Cl. 36—11 **11 Claims**



1. A stitched-down shoe comprising an upper with an outwardly-turned edge and a base, said upper meeting said base at a stitching edge, said base having a seam groove laterally in the base and running near the upper edge of the base, and the stitch holes are directed to some extent perpendicularly into the seam groove, said outwardly turned edge of said upper being sewn directly to said base.

4,308,672

ADJUSTABLE AND FLEXIBLE CLOSURE ASSEMBLY FOR SHOES WITH VARIABLE OPENING

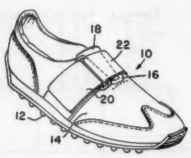
Anthony J. Antonious, 205 E. Joppa Rd., Towson, Md. 21204

Filed Mar. 16, 1979, Ser. No. 21,009

The portion of the term of this patent subsequent to Mar. 21, 1995, has been disclaimed.

Int. Cl.³ A43B *11/00*

U.S. Cl. 36—50 **24 Claims**



1. A shoe having a sole, uppers and a variable instep opening in combination with an adjustable and flexible closure assembly spanning said variable instep opening, said closure assembly comprising:

a flexible, multi-adjustable, separable fastener means having first and second fastening members including arrays of complementary, coacting flexible gripping elements for securing said closure assembly;

a fastener strap included on one side of said shoe having a fixed portion and a free end, said free end including said first fastening member, said second fastening member positioned adjacent said fixed portion of said fastener strap; and

anchor means on the opposite side of said shoe, said anchor means having an opening through which said free end of said fastener strap passes permitting adjustment to maintain a precise desired tautness of said closure assembly to fasten said shoe.

4,308,673

STIFFENING AND LIKEWISE NON-SLIP MATERIAL FOR THE HEEL REGION OF SHOES CONTAINING THIS MATERIAL AND PROCESS FOR STIFFENING THE HEEL REGION OF SHOES

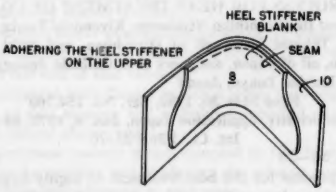
Olaf Möbius, Rodenbach, Fed. Rep. of Germany, assignor to Deutsche Gold-und Silber-Scheideanstalt Vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Jun. 26, 1979, Ser. No. 52,306

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1978, 2828509; Jun. 29, 1978, 7819462[U]

Int. Cl.³ A43B *13/42, 23/08*

U.S. Cl. 36—68 **10 Claims**



1. A process for stiffening the heel region of a shoe comprising simultaneously stiffening the heel region and producing the non-slip effect by adhesively joining a blank of the formable

shoe inner material which is thermoplastic and in the form of continuous sheets or blanks, said material comprising a single layer fiber structure loaded with at least one synthetic resin acting as a stiffening agent at a temperature up to 60° C. in an amount of 0.1 to 0.9 kg per square meter of fiber structure and wherein at least one one surface of the shoe inner material is slip or skid preventive.

4,308,674

SKI BOOT MADE FROM SYNTHETIC PLASTIC MATERIAL WITH SEPARATED BOOT AND LEG PORTION

Vanio Tessaro, Caerano S. Marco, Italy, assignor to Calzaturificio San Marco Di Santo Tessaro & C.S.n.c., Caerno S. Marco, Italy

Filed Dec. 6, 1979, Ser. No. 100,817
Claims priority, application Italy, Dec. 15, 1978, 61950/78[U]
Int. Cl.³ A43B *5/04*
U.S. Cl. 36—118 **7 Claims**

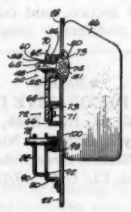
1. A ski boot made of plastic material and comprising separate boot and leg portions, said boot portion including a sole to which the leg portion is rigidly and non-pivotally secured, said leg portion extending above the boot portion and being adapted to flex in response to flexure of the boot portion.

4,308,675

DISCHARGE VANE ARRANGEMENT FOR SNOW THROWER

Warren W. Pendry, Galesburg, and Carl E. Seyerle, Abingdon, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Mar. 6, 1980, Ser. No. 127,824
Int. Cl.³ E01H *5/00*
U.S. Cl. 37—43 D **9 Claims**



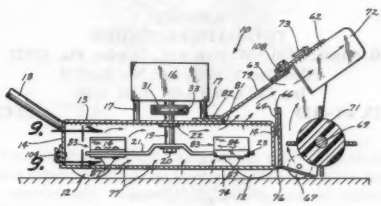
1. A snow thrower comprising a housing carrying an impeller for rotation about a transverse axis and having an upwardly open discharge chute disposed above said impeller and including a transverse rear wall, at least one deflector vane disposed in said discharge chute for directing the discharge of snow propelled upwardly through said discharge chute by said impeller, means pivotally mounting said deflector vane on said rear wall for free pivotal movement between forward, left and right discharge positions, said mounting means including a pivot pin extending from said deflector vane and rotatably through said rear wall and having an end rearwardly of said rear wall, and a control mechanism located exteriorly of said discharge chute and including means located rearwardly of said rear wall and connected to said pivot pin end for rotation thereof so as to selectively pivot said deflector vane between said positions.

4,308,676

LAWN MOWER POWER TAKE-OFF AND ACCESSORIES

Maurice S. Doane, 3014 S.W. 40th, Des Moines, Iowa 50321

Filed Jul. 16, 1980, Ser. No. 169,500
Int. Cl.³ E01H *5/00*
U.S. Cl. 37—43 L **9 Claims**



1. In combination with a lawn mower including a housing connected to and supported by a plurality of ground engaging wheels, the housing including a substantially horizontally disposed deck and a downwardly disposed flange extending from the outer edges of the deck, an engine disposed above and supported by the deck, a vertically disposed drive shaft driveably rotated by the engine, and a cutting blade operably connected to the drive shaft at a point below the deck, the improvement comprising:

a drive train operably connected to said drive shaft; said implement being a blower including an enclosure having a substantially open front and having an open slot in the rear thereof;

said deck including an opening at a point above said cutting blade; and

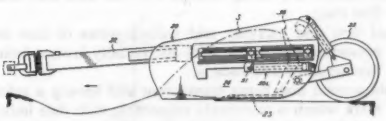
an air duct interconnecting the open slot of the enclosure and the opening in the deck, whereby air is forced through the air duct and out of the open front of the enclosure.

4,308,677

EJECTOR TYPE SCRAPER

William C. Behm, McAllen, Tex., assignor to Reynolds Manufacturing Company, Cedartown, Ga.

Filed May 19, 1980, Ser. No. 148,181
Int. Cl.³ E02F *9/28*
U.S. Cl. 37—126 AE **11 Claims**



1. An ejector type scraper, comprising a bucket having side walls and a bottom wall forming an open front end through which soil passes to load the bucket as it is moved forwardly over the ground surface, an ejector having a generally vertical front face extending across the bucket from one side wall to the other and supported by the bucket for movement between a rearward position as the bucket is loaded and a forward position to eject soil therefrom, and a pair of hydraulically operated, extendible and retractable actuators each connected at one end to a side wall of the bucket and at the other end to the ejector near one side edge thereof, each actuator being of the same size and comprising a cylinder, a piston reciprocable in

the cylinder, and a rod on the piston projecting from one end of the cylinder, said actuators being reversed end for end so that the rod of one extends as the rod of the other retracts in order to move the ejector between its rearward and forward positions, first conduit means connecting the cylinders with one another on one side of the pistons thereof so that hydraulic fluid which fills the conduit means and the cylinders on said one side of the pistons will transmit the movement of one piston to the other, and second conduit means for introducing hydraulic fluid into one cylinder while exhausting it from the other cylinder on the other side of the pistons thereof.

4,308,678

TWO-DATE REMINDER

Joel B. Slobin, 2430 NW. 89th Ave., Sunrise, Fla. 33322

Filed Dec. 8, 1980, Ser. No. 214,575

Int. Cl.³ G09D *3/08, 3/06, 3/00*

U.S. Cl. 40—113 **10 Claims**

1. A two-date reminder comprising:

a support carrying a wall which presents a fixed reference mark;

a first disc rotatably mounted behind said wall and carrying a first series of date indicia extending circularly around the rotational axis of said disc, said date indicia being movable visibly in succession past said reference mark when said first disc is turned, whereby said reference mark designates on said first series of date indicia a first date which corresponds to the rotational position to which said first disc is adjusted;

a second disc rotatably mounted behind said wall coaxial with and independent of the rotational adjustment of said first disc;

one of said discs carrying a second series of date indicia extending circularly around the rotational axis of the discs concentric with said first series of date indicia;

and means for visually designating on said second series of date indicia a second date corresponding to the rotational position to which said second disc is adjusted;

said second disc being located between said wall and said first disc;

said first disc carrying said second series of date indicia positioned concentric with and radially inward from said first series of date indicia;

said second disc being transparent and having a reference mark which is selectively registrable with date indicia on said first and second series in accordance with the rotational adjustment of said second disc with respect to said first disc;

the date indicia of said second series matching the date indicia of said first series at the same locations and being inverted with respect thereto;

said reference mark on the second disc being registrable with the first series of date indicia on the first disc at the same circumferential side of the latter as said reference mark on said wall of the support;

and said reference mark on the second disc being registrable with said second series of date indicia on the first disc at the opposite circumferential side of the latter from said reference mark on said wall of the support.

4,308,679

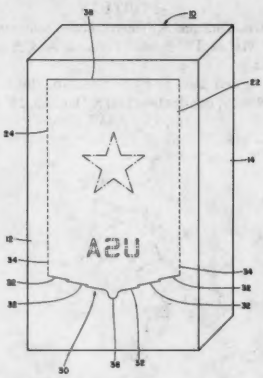
LAMINATED CONTAINER STRUCTURE INCORPORATING A PEELABLE PANEL SECTION HAVING A HEAT TRANSFERABLE IMAGE

George C. Ray, III, Battle Creek; Michael J. Otto, Kalamazoo, and Charles E. Price, Delton, all of Mich., assignors to General Foods Corporation, White Plains, N.Y.

Continuation of Ser. No. 2,701, Jan. 10, 1979. This application Dec. 22, 1980, Ser. No. 219,008

Int. Cl.³ G09F *3/00*

U.S. Cl. 40—312 **11 Claims**



1. A laminated container structure comprising on inner wall constituted of a substantially rigid material; an outer wall of a generally pliant material adapted to have indicia imprinted on at least the outer surface thereof; adhesive means extending intermediate said inner and outer walls for adhesively fastening said walls to each other; perforations extending through at least said pliant outer wall in a predetermined tear outline defining a removable panel section; a heat transferable image provided on said panel section; adhesive-repellent means provided intermediate the inner surface of said outer wall and said adhesive means substantially coextensive with the area of said removable panel section to prevent the latter from adhering to said inner wall and facilitate tearing off of said removable section along said tear outline without adversely affecting the integrity of said container structure, and a protective coating applied on said panel section, said coating imparting scuff resistance to said heat transferable image.

4,308,680

SCINTILLATING DECORATIVE DISPLAY DEVICE

Aharon Aboudi, 22 Hida St., Bnei Brak, Israel

Filed May 2, 1980, Ser. No. 146,067

Claims priority, application Israel, Mar. 5, 1980, 59531

Int. Cl.³ G09F *19/00*

U.S. Cl. 40—613 **5 Claims**

1. Scintillating display apparatus for mounting on a base panel and comprising a unit panel having a reflecting disk

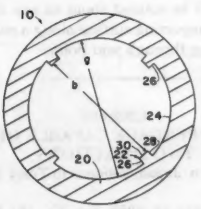
suspended therefrom, said unit panel having an elongated rectangular supporting member of inverted nose-like profile integral with and projecting from the median part of the front surface of the unit panel and extending substantially from just below the top of the unit panel to just above the bottom thereof, the supporting member being slightly bevelled on either side of the vertical median line thereof, which thus forms a ridge extending along said inverted profile, said ridge being slanted slightly downwardly and rearwardly from just below the top of the supporting member to substantially the middle of the height thereof and at a slightly larger angle at the lower half thereof, a bore being provided just below the top of the supporting member for the reception of a projecting rivet having a rivet head from which the reflecting disk is freely and swingably suspended, said disk, when suspended, being substantially coextensive with the unit panel.

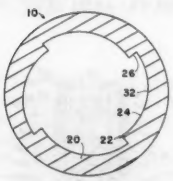
4,308,681

PROGRESSIVE RATCHET RIFLING IN A FULL GAIN TWIST

Richard M. Gorman, 7915 Redstone Rd., Kingsville, Md. 21087

Filed Mar. 14, 1980, Ser. No. 130,383
Int. Cl.³ F41C *21/00*
U.S. Cl. 42—78 **9 Claims**





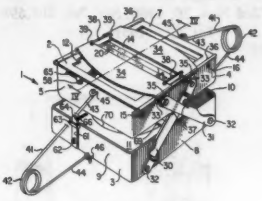
1. In a barrel having rifling running from beginning to end of a portion of the bore and including surfaces defining lands, and grooves, the lands having respective leading edges for guiding projectiles and trailing edges and tops the improvement comprising in combination: at the beginning each land having in cross-section a relatively narrow and shallow rectangular shape with the leading and trailing edges relatively equal in depth, said rifling being at the beginning relatively parallel with the bore and running forwardly therefrom in an accelerating spiral; and concurrently with said forward running each groove surface rotating in a direction increasing the depth of the leading edge of a land adjacent to a first side thereof and decreasing the depth of the trailing edge of a land adjacent to a second side thereof until at said end the trailing edge and top of each land are merged with an adjacent rotated groove contour.

4,308,682

HUMANE ANIMAL TRAP

Edward Cesar, P.O. Box 334, Granum, Alberta, Canada (T0L 1A0)

Filed Jul. 28, 1980, Ser. No. 172,963
Claims priority, application Canada, Aug. 7, 1979, 333316
Int. Cl.³ A01M *23/24*
U.S. Cl. 43—88 **5 Claims**



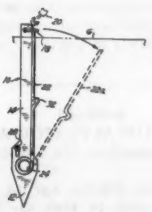
1. An animal trap comprising a casing, said casing including opposed upper and lower sections open at their bottom and top ends, respectively, whereby the section can be telescoped together into a set position; anchor means for anchoring said casing in one location; hinge means interconnecting the upper and lower sections, whereby the sections can move relative to each other into a spaced apart relationship when the trap is sprung; first spring means biasing said sections to the sprung position; latch means for locking said sections in the set position; jaw means pivotally mounted in said upper section defining the top of said upper section; second spring means biasing said jaw means to the closed position, in which the jaw means forms a continuous top surface on the casing; trigger means for actuation by said jaw means to release said latch means, whereby the spring means moves said sections rapidly apart from the set to the sprung position; said jaw means including opposed, resilient free edges for gripping the leg of an animal, whereby, when an animal steps on said jaw means, the jaw means opens permitting entrance of the paw of the animal into the trap, actuating said trigger means to release the latch means causing the upper section to move upwardly on the leg of the animal, and said second spring means biases said jaw means to the closed position to resiliently engage the leg of the animal above the paw so that removal of the leg from the trap by pulling is prevented.

4,308,683

TRAP ANCHORING STAKE

Donald R. Lee, Box 588, Sundance, Wyo. 82729

Filed Jun. 6, 1980, Ser. No. 157,005
Int. Cl.³ A01M *23/00*
U.S. Cl. 43—96 **15 Claims**



1. A stake device for tethering an animal trap of the leg hold type comprising an elongated stake sharpened at its lower end to facilitate driving it into the ground, an effectively rigid spring retainer arm pivoted at its lower end to the lower end of said stake and spring means urging the retainer arm about its pivot connection to said stake in a direction away from said stake in which said retainer arm and spring means comprises a

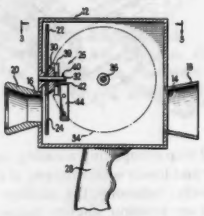
retainer arm portion having one end formed into a coil spring portion.

4,308,684

TOY MOVIE CAMERA

Michael J. Ferris, Chicago; Harry Disko, South Barrington, and Sam J. Cottone, Addison, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Nov. 20, 1980, Ser. No. 208,695
Int. Cl.³ A63H *33/30*
U.S. Cl. 46—39 **5 Claims**



1. An amusement device in the form of a toy camera, comprising:

a housing including means defining two aligned housing apertures in opposite sides of said housing and defining a light receiving passageway controllably connecting said apertures;

opaque means for intermittently obstructing said light receiving passageway for intermittently and controllably preventing light received in one housing apertures from being transmitted directly into said second housing aperture, said opaque means including an opaque panel disposed within said passageway, said panel defining a panel aperture and further including means for disposing said panel aperture in alignment with said two housing apertures;

means for intermittently and controllably removing said opaque obstructing means from said light receiving passageway to intermittently and controllably permit light received in said one housing aperture to be transmitted directly into said second housing aperture, said removing means further including means for rotating said panel to intermittently and repeatedly dispose said panel aperture in alignment with said two housing apertures; and

means for producing a click sound only when said panel aperture is approximately in alignment with said two housing apertures, said sound producing means including a spring biased strip disposed within said housing to intermittently contact a portion of said means for removing said opaque obstructing means from said light passageway and to bias said panel out of a position with its panel aperture approximately in alignment with said light passageway.

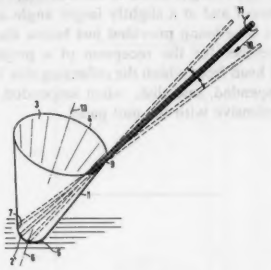
4,308,685

TOP WITH ACTUATOR ROD

Reinhard Hertel, Rollbaumsberg 284, D-2864 Hambergen, Fed. Rep. of Germany

Continuation of Ser. No. 896,438, Apr. 14, 1978, abandoned. This application Mar. 19, 1980, Ser. No. 131,867
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1977, 2717616
Int. Cl.³ A63H *1/02*
U.S. Cl. 46—66 **18 Claims**

1. A top, comprising a hollow body having a longitudinal axis, an outer surface of revolution formed about said axis, an upper open end, an opposite closed end, said outer surface having a part-spherical convex outer surface portion coaxial with said axis and adapted to frictionally engage a supporting surface on which the top is to be spun, and an inner surface having at said closed end a concave surface portion coaxial with said axis and a circular surface upwardly spaced therefrom adjacent said open end and also coaxial with said axis; and an actuator rod adapted to frictionally engage with one end thereof said inner surface portion and with a portion upwardly spaced from said end, said circular surface in such a manner that the axis of the top is inclined at an angle of less than 90° to



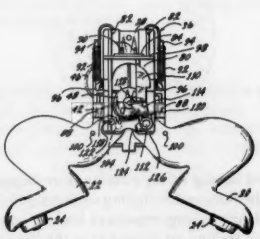
the supporting surface and so that said convex outer part-spherical portion will engage said supporting surface at a point outside said axis, whereby when said hollow body is pushed along said supporting surface by said actuator rod while maintaining said axis inclined at said angle by the frictional contact of the rod with said surface portion and with said circular surface, the top will be rotated about its axis due to frictional contact with said supporting surface along a path transverse to said axis and passing through said point.

4,308,686

TOY HAVING APPENDAGE CAPABLE OF MOVING IN TWO DIRECTIONS

Masaki Ikeda, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed May 19, 1980, Ser. No. 151,435
Claims priority, application Japan, Jun. 8, 1979, 54-78812[U]
Int. Cl.³ A63H *13/02*
U.S. Cl. 46—129 **13 Claims**



1. A toy capable of making repetitive movements with respect to a medium supporting the toy which comprises:

a toy body;

at least one appendage movably mounted in said toy body, a portion of said appendage exposed from said toy body and positioned such that said portion of said appendage exposed from said toy body is capable of contacting said support medium;

means located within said toy body and operatively connected to said appendage for moving said portions of said appendage exposed from said toy body at a first velocity

in a first direction and at a different velocity in a different direction;

said means including rotary means capable of rotary movement, linear means capable of linear movement, and interfacing means for converting said rotary movement into said linear movement;

said interfacing means including an engagement means pivotly mounted on said linear means, said engagement means reversibly engagable with said rotary means between a positive engagement position wherein rotary movement of said rotary means in one of a clockwise or counterclockwise direction is converted into linear movement of said linear means and a passive position wherein rotary movement of said rotary means in the other of said clockwise or counterclockwise direction is not converted into linear movement of said linear means;

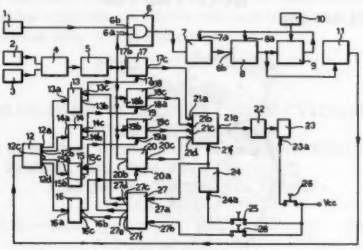
said linear means operatively connected to said appendage to move said appendage in said first direction and said different direction at said first velocity and said different velocity, respectively.

4,308,687

APPARATUS FOR DETECTING CLIMATIC CONDITIONS FAVORING THE DEVELOPMENT OF PERONOSPORALES

Giancarlo Cavanna, Borgo S. Dalmazzo, and Gian Paolo Tavoni, Cambiano, both of Italy, assignors to Centro Ricerche Fiat S.p.A., Turin, Italy

Filed Jun. 25, 1980, Ser. No. 162,992
Claims priority, application Italy, Jul. 18, 1979, 68491 A/79
Int. Cl.³ A01G *1/00*
U.S. Cl. 47—1 R **12 Claims**



1. Apparatus for detecting climatic conditions favourable to the development of Peronosporales on plant leaves and for indicating the optimum time for effecting fungicidal treatment thereof, said apparatus comprising:

sensor means for detecting conditions corresponding to a saturation or superficial dampness of plant leaves sufficient to allow the development of zoospores;

timer means connected to the sensor means and operative to output an 'infestation' signal indicative of the occurrence of a Peronosporales infestation if the said conditions of saturation or of surface dampness of the leaves persist for a time period sufficient for the penetration of the zoospores into the stomata of the leaves, said timer means being so arranged that the duration of the time period timed thereby is a function of the ambient temperature;

auxiliary timing means operatively interconnected with said timer means and responsive to the generation of a said infestation signal to time a delay period during which the output of a further infestation signal is prevented, the timer means at the end of said delay period being arranged to be in a state ready to repeat its timing function for a further Peronosporales infestation; and

monitoring means responsive to each said infestation signal to monitor the speed of advance of the Peronosporales infestation indicated thereby as a function of the temperature and the humidity of the air, said monitoring means comprising a temperature sensor operative to provide an output signal indicative of the ambient air temperature, a humidity sensor operative to provide an indication of the ambient humidity, a pulsed signal generator connected to said temperature and humidity sensors and operative to generate a pulsed electrical signal the frequency of which is dependent on the ambient temperature and humidity, a plurality of monitor counters, control means responsive to successively generated said infestation signals from said timer means to cause successive ones of said monitor counters to start counting the pulses produced at the output of the said pulsed signal generator, the counts of each counting monitor counter being indicative of the advance of a corresponding infestation detected by the apparatus, and output and display means operable to provide a visual indication of the current counts of said monitor counters.

4,308,688

TREE WELL COVER

Thomas L. Revane, 10469 Corvallis Ct., Ventura, Calif. 93003

Filed Mar. 3, 1980, Ser. No. 126,459
Int. Cl.³ A01G *17/00*
U.S. Cl. 47—25 **12 Claims**

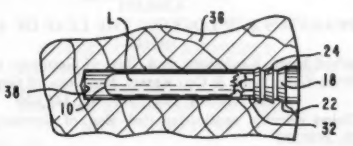
1. A tree well cover having at least two sections which interfit and form a central opening which encompasses the base of a tree wherein each section includes a top side and an underside, said underside including a plurality of downwardly depending ring members radially offset from each other and a peripheral downwardly extending wall, said wall including an outer portion and a face portion abutting a corresponding face portion of at least one other section.

4,308,689

TREE MEDICATION CAPSULE

Clark E. Jenson, Rte. #3, Blair, Nebr. 68008, and Warren D. Wolfe, 222 Park Ave., Fremont, Nebr. 68025

Filed Jan. 7, 1980, Ser. No. 109,879
Int. Cl.³ A01G *29/00*
U.S. Cl. 47—57.5 **10 Claims**



1. A tree medication capsule adapted to be inserted into a bore of a tree comprising

a vial having a diameter smaller than the bore's diameter,

a medication disposed in said vial,

an end cap sealingly closing said vial to retain the medication therein,

ridge means on said end cap having a diameter larger than the bore's diameter to retain said capsule in the bore of the tree,

finger means extending from said end cap in spaced relation to said ridge means to grip adjacent portions of said vial, said vial, said medication and said end cap forming a self-

contained capsule which is insertable as a unit into a bore in a tree, and

said vial being made of a frangible material whereby an impact force applied to said end cap causes breaking of the vial to permit said medication to escape into the tree.

4,308,690

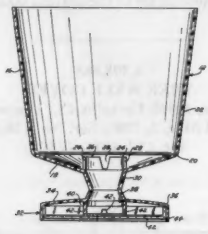
PLANTER

Max S. Klein, Hollywood, Fla., assignor to Klein Plastic Products, Inc., Baraboo, Wis.

Filed May 5, 1980, Ser. No. 146,643

Int. Cl.[3] A01G *25/00*

U.S. Cl. 47—79 **10 Claims**



1. A planter comprising a plant holder made of opaque plastic having

(a) a container adapted to hold soil for a plant having a bottom wall with an aperture,

(b) a base having a top wall with an aperture and a depending peripheral flange adapted to rest on a supporting surface,

(c) a tubular member holding said bottom wall and said top wall in spaced axial alignment by liquid tight connection to said walls surrounding said apertures adapted to conduct excess water from the container into the base,

(d) a separate, removable soil retaining closure for the lower end of said tubular member, and

(e) a transparent plastic water receptacle adapted to be held within and in liquid tight relation to said base to receive such water.

4,308,691

APPARATUS FOR LOCKING THE LEAF OF A SWING DOOR

Manfred Horn, Kaufungen, Fed. Rep. of Germany, assignor to Firma Gebr. Bode & Co., Kassel, Fed. Rep. of Germany

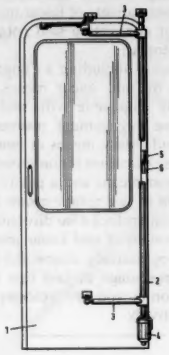
Filed Apr. 28, 1980, Ser. No. 145,000

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1979, 2930250

Int. Cl.[3] E05F *7/02*

U.S. Cl. 49—255 **6 Claims**

1. In an apparatus for locking a swing door leaf with respect to a door frame comprising a turnable shaft, an arm operatively connecting said shaft with said leaf, and drive means for rotating said shaft to open and close the door leaf, said drive means producing slight axial movement of said shaft as said door leaf appoaches the closed position, the improvement comprising locking apparatus including first and second locking elements respectively on the door frame and door leaf, said locking elements coming into confronting relation when the door leaf approaches the closed position, said locking elements including respective wedge-shaped nose portions which interengage and lock the locking elements when the door leaf is closed and the shaft is axially moved, one of said locking elements including an axial extension overlapping the nose portion of the other



locking element to form an abutment for said other locking element to limit the degree of angular closure of the door leaf.

4,308,692

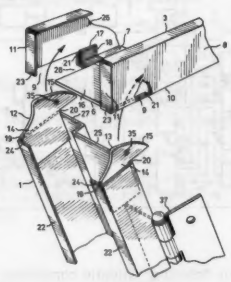
DOOR FRAME KIT

Roy W. Rumble, deceased, late of London, England, and by Zilla K. Rumble, executrix, 20 Green La., Oxhey, Watford, Hartfordshire, England

Filed Jun. 21, 1979, Ser. No. 50,594

Int. Cl.[3] E06B *1/04*

U.S. Cl. 49—504 **7 Claims**



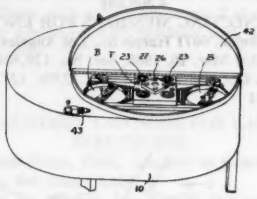
1. A kit comprising two stiles, a threshold member, and a lintel member, each stile being engageable with said threshold and lintel members, each stile having a pair of rigid, parallel flanges at one end, each flange having a neck portion extending rigidly from the end of the stile and a transverse projection from but one side of the neck, and being rotatably insertable through a corresponding longitudinal opening adjacent an end of one of said members whereby, when inserted through said opening, the neck is engaged in the opening to prevent horizontal movement of the stile relative to said one member, the projection extends away from said end of said one member and engages an inner generally horizontal surface of said one member, the stile and said one member abutting when the projection of the flange is so engaged thereby preventing vertical movement of the stile, the other end of each stile being securable to said other member to complete a rectangular frame, each stile having, at said other end, a pair of rigid flanges engageable with said one member in the same manner as the flanges at its said one end, whereby each stile is engageable with said one member irrespective of which end of the stile is uppermost.

4,308,693

BARREL-FINISHING APPARATUS

John F. Harper, Portland, Conn., assignor to Harper Buffing Machine Co., East Hartford, Conn.

Filed Feb. 21, 1979, Ser. No. 13,630
Int. Cl.[3] B24B *31/02*
U.S. Cl. 51—164.2 6 Claims



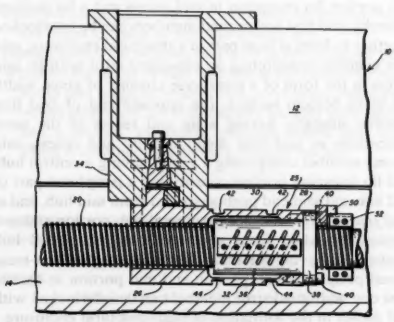
1. In a surface finishing machine of the type having a stationary frame and a rotary turret, a finishing barrel supported on the turret for orbital movement in one angular direction about a first axis to impart a first centrifugal force on contents of the barrel, the improvement comprising sling mounting means carried by the turret and engageable with the barrel for supporting the same for radial movement relative to the first axis, said sling mounting means including an endless continuous drive member having a loop in which the barrel is slung and limiting radial displacement of the barrel from a stationary starting position upon orbital movement thereof while causing the barrel to rotate continuously in the opposite angular direction sufficiently to impart a second force on contents thereof to modify the effect of the first centrifugal force and wherein said machine has a plurality of said barrels each of which is slung in an individual loop of said endless member.

4,308,694

WHEELHEAD DRIVE ASSEMBLY FOR A CYLINDRICAL GRINDING MACHINE

Robert E. Bricker, Waynesboro, Pa., assignor to Litton Industrial Products, Inc., Waynesboro, Pa.

Filed Jul. 10, 1980, Ser. No. 168,456
Int. Cl.[3] B24B *47/04*
U.S. Cl. 51—165.8 2 Claims



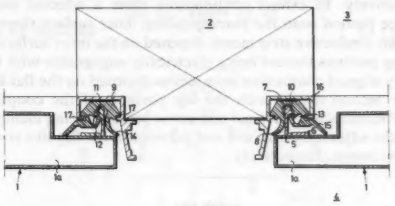
1. A cylindrical grinding machine comprising:
a slidable wheelhead assembly,
a slide bed having ways supporting said wheelhead assembly, including means to prevent horizontal deviation of said wheelhead along said ways, and
precision displacement means to slide said wheelhead assembly along said ways including,
rotatable ball screw means axially secured to said slide bed,
means to rotate said ball screw comprising a stepping motor,
ball screw nut means engaging said ball screw means, and
nut housing means for coupling said nut means to said wheelhead assembly so that rotation of said ball screw slidably displaces said wheelhead assembly along said ways,
said nut housing means including a medial flexible portion comprising two horizontal parallel plate portions having selectively configured transverse grooves so that vertical radial strain on said ball screw attributable to said wheelhead assembly is minimized.

4,308,695

PRESSURE-RELIEVING FACADE

Ruedi Ehrsam, Riehen, Switzerland, assignor to Eltreva AG, Aesch, Switzerland

Filed Sep. 21, 1979, Ser. No. 77,773
Int. Cl.[3] E04B *1/98, 2/88*
U.S. Cl. 52—1 15 Claims



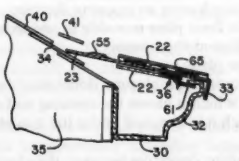
1. A pressure-relieving facade structure for a building, comprising a plurality of slab-like elements spaced from one another in a first direction and extending in a second direction which is transverse to said first direction which directions lie in a plane substantially parallel to the plane of a facade of a building; at least one retaining leg extending from each of said slab-like elements toward the facade normal to the plane of the latter, said retaining leg having a free end portion which faces toward the facade and is thickened; and a plurality of elastic receiving elements fixedly attached to the facade of the building and each releasably receiving said thickened end portion of a respective one of said retaining legs with elastic clamping action, each of said receiving elements having a first sealing lip covering said retaining leg of a respective one of said slab-like elements from outside of the latter, and a second sealing lip covering said retaining leg of a respective one of said slab-like elements from inside of the latter.

4,308,696

GUTTER COVER ASSEMBLY

Robert W. Schroeder, Bensenville, Ill., assignor to Romark Technologies, Inc., Bensenville, Ill.

Filed Mar. 12, 1980, Ser. No. 129,419
Int. Cl.[3] E04D *13/00*
U.S. Cl. 52—11 3 Claims



1. An improved gutter cover assembly useful for covering open-trough gutter apparatus attachable to roof lines of building structures comprising in combination flat-like elongated

length cover section means extendable lengthwise to cover the open-trough gutter apparatus, coupling cover section means interconnecting adjacently positioned pairs of the flat-like cover section means, each of the coupling cover section means including oppositely opening U-shaped pairs of leg portions thereof, each of said pairs of leg portions to be clamped over an adjacent end portion of the flat-like cover section means for providing a continuous plurality of end-to-end coupled flat-like cover section means, terminal end cover section means including U-shaped pairs of leg portions to be clamped over uncoupled end portions of the flat-like cover section means, respectively, to provide spaced apart terminal end cover section means for terminating the intercoupled plurality of flat-like cover section means, clamping means for attaching the intercoupled gutter cover assembly to the covered gutter apparatus, and electrically conductive heater element means comprising spaced apart conductive strip means being axially aligned to extend along the coupled plurality of flat-like cover section means, coupling cover section means and terminal end cover section means collectively, said conductive strip means being disposed on the U-shaped leg portions of the coupling cover section means and the terminal end cover section means, respectively, to extend continuously from a selected outer surface thereof onto the corresponding inner surface thereof, and the conductive strip means disposed on the inner surface of the leg portions thereof being electrically engageable with the axially aligned conductive strip means disposed on the flat-like cover section means with the leg portions of the coupling cover sections and terminal end cover sections being clamped over the adjacently disposed end portions of the flat-like cover section means, respectively.

4,308,697

FLOOR PLATE ASSEMBLY

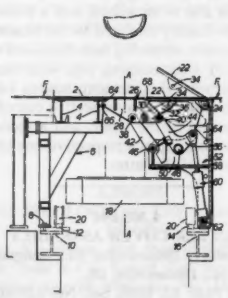
David W. Guppy, Poole, England, assignor to Loewy Robertson Engineering Co., Ltd., Poole, England

Filed Feb. 4, 1980, Ser. No. 118,228

Claims priority, application United Kingdom, Feb. 2, 1979, 03808/79

Int. Cl.³ B65G *11/00*

U.S. Cl. 52—64 **10 Claims**



1. A floor plate assembly comprising:

a floor structure having an opening therein;

a first movable floor plate movable to and from an operative position adjacent the opening;

a closure floor plate;

means for moving the closure floor plate between a first position in which it closes the opening and a second position in which it is disposed under the movable floor plate; and

connecting means operative between the closure floor plate and the movable floor plate such that, during the movement of the closure floor plate from the first position to the second position or from the second position to the first position, the movable floor plate is caused to move from its operative position, and is then returned to said operative position, in response to said movement of said closure floor plate whereby obstruction of the movement of said closure floor plate between said first and second positions, by said movable floor plate, is avoided.

4,308,698

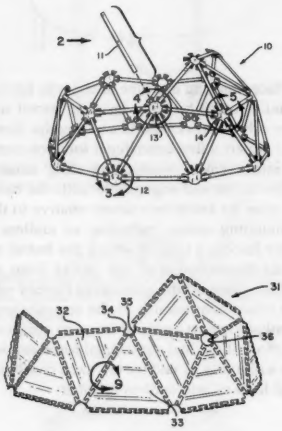
INTERCONNECTING MEMBERS FOR ENCLOSURES

Gregg R. Fleishman, 6071 Hargis St., Los Angeles, Calif. 90034

Filed Mar. 10, 1980, Ser. No. 128,504

Int. Cl.³ E04B *1/32*; E04H *12/06, 12/10*

U.S. Cl. 52—81 **5 Claims**



1. Interconnecting members for enclosures including, in combination:

(a) a first member having top and bottom surfaces with a lip formed at one end constituting an extension of the bottom surface, and a recess formed in said bottom surface at a given distance along said member from said lip; and

(b) a second member having top and bottom surfaces with an end portion for reception in said recess and a lip portion, whereby said first and second members can be interlocked together to form at least part of a structural enclosure, said first member constituting an elongated strut with its said recess in the form of a transverse channel of given width cut in its bottom surface, the opposite end of said first member similarly having a lip and recess of the same dimensions as said first mentioned lip and recess, said second member comprising a gusset having a central hub, said lip engaging portion constituting a peripheral part of said hub and said end portion spaced from said hub, and at least one additional other peripheral hub portion and end portion extending from said additional peripheral hub portion and having the same dimensions as said first-mentioned peripheral hub portion and end portion so that at least one additional strut member can be interlocked with said gusset in the formation of said structural enclosure.

4. Interconnecting members for enclosures including, in combination:

(a) a first member having top and bottom surfaces with a lip formed at one end constituting an extension of the bottom surface, and a recess formed in said bottom surface at a given distance along said member from said lip; and

(b) a second member having top and bottom surfaces with an end portion for reception in said recess and a lip portion, whereby said first and second members can be interlocked together to form at least part of a structural enclosure said

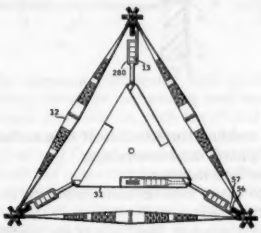
first member comprising a triangularly shaped sheet, said one end constituting at least one projecting side edge made up of a stem and cross portion defining a T-shape, the outer lower surface of the cross portion extending outwardly to define said lip, said recess being formed on either side of said stem portion spaced inwardly of said lip by said given distance, said second member being of triangular shape with a complimentary T-shape projecting side edge dimensioned to interlock with said first mentioned T-shape.

4,308,699

STRUCTURAL STRUT AND NODE FOR LARGE SPACE STRUCTURES

Paul Slysh, San Diego, Calif., assignor to General Dynamics Corporation, San Diego, Calif.

Division of Ser. No. 930,823, Aug. 3, 1978. This application Dec. 3, 1977, Ser. No. 99,263
Int. Cl.³ E04H *12/18*
U.S. Cl. 52—108 **5 Claims**



1. An expandable double tapered structural strut having a substantially circular cross-section along a portion of its length and capable of being compressed flat for storage comprising;
two independent half-shells, each half-shell having first and second longitudinal edges;
said shells being double tapered with the largest cross-section substantially at mid-length and tapering in both directions to flat ends;
a longitudinal hinge connecting the first longitudinal edges of each of said half-shells;
a second longitudinal hinge connecting the second longitudinal edges of each of said half-shells; and
biasing means for holding said strut in an expanded position;
whereby the walls of said half-shells are relatively rotatable about said hinge between a first, strut-compressed position where said walls are substantially parallel with each other and a second, expanded, position where said walls lie along a continuous generally conical surface.

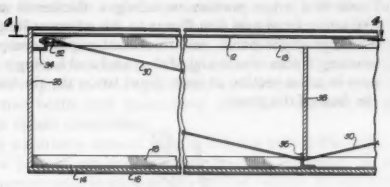
4,308,700

FIBERGLASS STRUCTURAL MEMBER OF LAYER CONSTRUCTION AND METHOD OF MAKING SAME

Byron A. Romig, Jr., 3920 Eagle Rock Blvd., Los Angeles, Calif. 90065

Filed Oct. 10, 1979, Ser. No. 83,335
Int. Cl.³ E04C *3/10, 3/29*
U.S. Cl. 52—225 **6 Claims**

1. A structural member for use as a beam, a column, or the like comprising:
an elongated, closed, multi-sided inner layer of fiber and resin material having substantial load-bearing capacity;
an elongated, closed, multi-sided outer layer of fiber and resin material surrounding said inner layer and having substantial load-bearing capacity;
a middle layer of fire retardant, heat resistant, insulating material firmly and tightly held between said inner and outer layers, whereby said middle layer acts as a spacer to rigidify said member; and



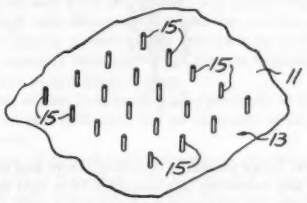
at least one tendon extending in tension between two ends of said members.

4,308,701

SAFETY DOWEL GUARD AND METHOD OF USE

Victor E. Wojick, 14449 Harrison, Livonia, Mich. 48154

Filed May 9, 1980, Ser. No. 148,456
Int. Cl.³ E04N *12/48*
U.S. Cl. 52—244 **13 Claims**



1. In the pouring of steel reinforced concrete for building floors and walls having steel reinforcements over an area to be poured and a series of parallel spaced rows of longitudinally spaced upright dowel bars extending over said area;
the method of protecting workers from impalement and injury due to falling onto said bars consisting of providing a series of downwardly facing dowel guard channels having longitudinally depending support pipes with an ID greater than said dowel bars;
and selectively positioning said channels over a series of dowel bars in each row and assemblying the respective pipes over and upon at least some of said dowel bars of each row of dowel bars;
a plurality of said channels being arranged in a series of parallel spaced rows over said area with the safety guard dowel channels in each row being in alignment and longitudinally spaced;
the top surfaces of the series of assembled channels being coplaner forming a protective cover over said dowel bars.

4,308,702

PLASTIC BUILDING PANEL AND METHOD FOR MAKING SAME

Joseph J. Rajewski, Staten Island, N.Y., assignor to GAF Corporation, New York, N.Y.

Continuation of Ser. No. 754,988, Dec. 28, 1976, abandoned. This application Jul. 31, 1980, Ser. No. 174,044
Int. Cl.³ E04C *2/38, 2/30;* B32B *1/04*
U.S. Cl. 52—519 **4 Claims**

1. An elongated rigid one piece plastic building panel having first and second longitudinally extending edge portions and first and second surfaces and further characterized by:
(a) said panel including a thermoformed face portion extending from the first edge portion of the panel to the second edge portion thereof;
(b) said first edge portion having a first flange extending

outwardly from said first surface and forming a generally U shaped opening in a direction facing said second edge portion;

(c) said first edge portion including a thickened section extending from said first flange to the adjacent longitudinal edge of the panel, said thickened section comprising abutting layers of material of the panel and having a thickness in cross section at least about twice the thickness of the face of the panel;

(d) said first flange extending outwardly from said thickened section and extending in a direction from said thickened section towards said second edge portion; and

(e) said second edge portion having a second flange extending outwardly from the second surface of the panel and forming a generally U shaped opening in a direction facing the first edge portion of the panel.

4,308,703

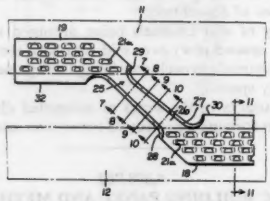
METAL CONNECTOR STRUTS FOR TRUSS-TYPE BEAMS

James Knowles, 1275 Club Dr., Bloomfield Hills, Mich. 48013

Filed Jan. 18, 1980, Ser. No. 113,171

Int. Cl.³ E04C *3/02*

U.S. Cl. 52—694 **19 Claims**



1. In a sheet metal web unit for interconnecting a pair of horizontally elongated, vertically spaced-apart wood chords, with said web unit having at least one strut and at least two flat connector portions, with said strut being channel shaped in cross-section and said connector portions integrally formed on its opposite ends for overlapping and fastening to vertical face portions of the respective wood chords by means of struck-out teeth formed on said connector portions, and with the legs which form such channel shape being arranged to extend from the channel base into the space between the chords, the improvement comprising the channel base gradually narrowing in width in the direction from the bottom end of said strut to the upper end of said strut, said channel base being bowed in cross-section at the lower end of said strut and substantially flat at the upper end of said strut, and the channel gradually flattening out from its lower end toward its upper end, and;

said legs forming the channel gradually increasing in cross-sectional length, that is, in the depth of the channel, from the lower end toward the upper end of said strut.

4,308,704

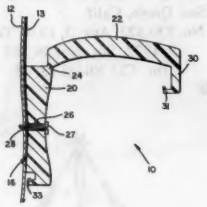
TRIM MOLDING

Ralph E. Lloyd, 3750 Atlanta Hwy., Athens, Ga. 30601

Filed Dec. 10, 1979, Ser. No. 101,438

Int. Cl.³ E04C *2/38;* E04F *19/02;* B60R *13/00*

U.S. Cl. 52—716 **7 Claims**



1. A trim molding for attachment to a surface to cover an elongate peripheral edge comprising:

an elongate base member;

an elongate cover member corresponding in length to said peripheral edge;

snap means depending from said cover member comprising an outside lip and a resilient snap member extending inwardly from said lip;

snap receiving means defined in said base member comprising a recess in said base member and a resilient snap receiving member within said recess;

an elongate hinge member connecting said cover member to said base member so as to permit said cover member to pivot about said hinge member and to fold over said base member, thereby allowing said resilient snap member of said snap means to releasably engage said resilient snap receiving means within said recess.

4,308,705

REINFORCING ELEMENT

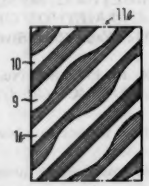
Walter Hufnagl, Lommelstrasse 9, 8000 München 71, Fed. Rep. of Germany

Continuation of Ser. No. 849,967, Nov. 9, 1977, abandoned. This application Mar. 9, 1979, Ser. No. 18,889

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1976, 2651119

Int. Cl.³ E04C *3/30;* D02G *3/00*

U.S. Cl. 52—734 **8 Claims**



1. An elongated reinforcing element, comprising a rod having a longitudinal axis and formed with at least two continuously and helically extending grooves each having two out-

wardly open ends and predetermined width and depth dimensions, said grooves extending at 45° to said longitudinal axis of said element, at least said width dimension of at least one of said grooves varying periodically along the length of said one groove.

4,308,706

SUPPORT BEAM FOR WALL OR CEILING PANELS

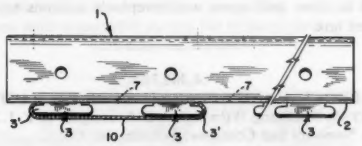
Willem Rijnders, Alblasserdam, Netherlands, assignor to Hunter Douglas International N.V., Curacao, Netherlands Antilles

Continuation of Ser. No. 14,714, Sep. 23, 1979. This application Oct. 28, 1980, Ser. No. 201,607

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1978, 7805600[U]

Int. Cl.³ E04B 5/52

U.S. Cl. 52—738 3 Claims



1. A beam for supporting elongated wall or ceiling panels from an underlying structure comprising said beam having a generally U-shaped cross-section, each leg of said beam being bent to provide an outwardly extending flange on each side of said beam, each of said flanges extending along the length of the beam, a plurality of connecter lugs on each flange, said lugs having been cut and bent from the material of said flanges to form lugs having an ear portion on each end thereof, said lugs extending outwardly of said flanges in a direction generally opposite to the direction in which said legs extend from said flanges, each of said lugs lying in a plane extending generally parallel to the length of the beam, the openings produced upon cutting and bending said lugs being arranged substantially mid-way of the width of the flanges, and said openings and said lugs having a width no more than half the width of the flange from which said lugs are bent.

4,308,707

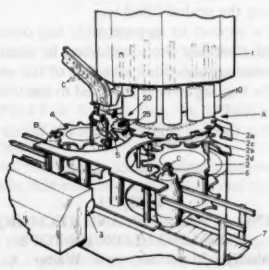
CLOSURE PRE-TIGHTENER FOR CLOSURE APPLICATING MACHINES

Wendell D. Willingham, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 3, 1979, Ser. No. 99,763

Int. Cl.³ B67B 3/20, 3/062; B65B 7/28

U.S. Cl. 53—314 1 Claim



1. In a capping machine for applying threaded caps to threaded bottle necks including bottle transfer means for moving the bottles successively in an upright position into the machine and means for depositing a cap in loose engagement on each bottle neck, the improvement comprising a cap hold-down plate mounted in overlying relation to the path of the bottles in said bottle transfer means and engagable with the top surface of each loosely positioned cap to exert a downward force thereon, means adjacent the said bottle path for relatively rotating the bottle and the respective cap in a direction to threadably engage the cap with the bottle while said hold-down plate is engaged with the cap, and spring pressed linkage means for concurrently exerting a downward force on said hold-down plate as the engaged cap moves downwardly on the respective bottle and maintaining said plate horizontal, said linkage means comprising:

(1) a stationary support plate overlying said bottle path;

(2) a pair of upstanding pivot brackets mounted on said support plate in transversely spaced relation to said bottle path;

(3) a generally horizontal first pivot pin supported by said pair of brackets;

(4) a second upstanding bracket on said support plate in longitudinally spaced relation to said pair of pivot brackets;

(5) a second horizontal pivot pin supported by said second bracket;

(6) said support plate having an elongated slot therein lying intermediate said pair of pivot brackets;

(7) an upstanding L-shaped element rigidly secured at its base to said hold-down plate and projecting upwardly through said elongated slot, the top portion of said element having a vertical slot traversed by said first pivot pin, whereby said hold-down plate is vertically shiftable relative to said support plate;

(8) a pair of first links respectively pivotally mounted at one end on said first pivot pin on each side of said mounting element;

(9) a pair of second links respectively pivotally secured at one end to the other ends of said first links and at their other ends to a third pivot pin traversing the base portion of the L-shaped mounting element;

(10) a fourth horizontal pivot pin traversing the medial portions of said fourth links;

(11) a bifurcated spring seat mounted on said third pivot pin;

(12) a bifurcated spring seat mounted on said fourth pivot pin;

(13) a compression spring operating between said bifurcated spring seats to urge said cap hold-down plate downwardly relative to the support plate;

(14) and a generally triangular link having one vertex pivoted to said fourth pin, a second vertex pivoted to the top end of the mounting element and the third vertex pivoted to one end of a third link, the other end of said third link being pivoted to said second pivot pin, whereby said hold-down plate moves vertically with an engaged cap but maintains constant downward force on such cap and a horizontal position of the cap panel.

4,308,708

APPARATUS FOR FOLDING HINGED LID BOXES FROM CARDBOARD BLANKS AND FILLING THEM WITH TINFOIL WRAPPED CIGARETTE BLOCKS

Heinz Focke, Verden an der Aller, Fed. Rep. of Germany, assignor to Focke & Pfuhl, Verden an der Aller, Fed. Rep. of Germany

Division of Ser. No. 892,221, Mar. 21, 1978, abandoned, which is a division of Ser. No. 606,826, Aug. 21, 1975, Pat. No. 4,084,393. This application Aug. 10, 1979, Ser. No. 65,408

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1974, 2440006

The portion of the term of this patent subsequent to Apr. 18, 1995, has been disclaimed.

Int. Cl.³ B65B 19/20

U.S. Cl. 53—137 8 Claims

1. In an apparatus for folding rectangular hinged lid boxes from cardboard blanks and filling them with rectangular blocks of cigarettes wrapped in an inner liner of tinfoil, includ-

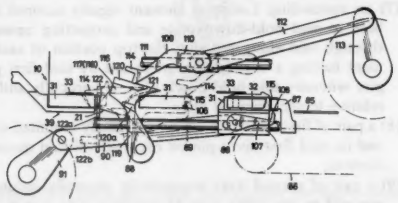
ing a rotatively indexable turret having a plurality of radially outwardly open pockets spaced around its periphery for individually accommodating a partially folded blank, and means for supplying individual blocks of cigarettes partially wrapped in a tinfoil liner such that five of their six faces are enclosed by the liner with unfolded side flaps and top and bottom flaps extending outwardly from one end thereof, improved means for delivering the blocks from the supplying means to partially folded blanks in the turret pockets, characterized by:

(a) a generally planar transporting platform for accommodating a partially wrapped block,

(b) means for reciprocatingly driving the platform between the supplying means and the turret,

(c) a pair of oppositely disposed lateral retaining members upstanding from the platform, each retaining member having an inwardly extending upper web, for locating a cigarette block in a predetermined position on the platform and for preventing its tinfoil liner from becoming unwrapped,

(d) a pair of cooperably movable first folding members mounted on opposite sides of the platform for folding the side flaps against said one end of a block during the movement of the platform toward the turret,



(e) a movable second folding member mounted on the platform for folding the bottom flap against said one end of the block and against the previously folded side flaps during the movement of the platform toward the turret,

(f) a movable third folding member mounted above the platform and synchronously driven therewith to move downwardly to fold the top flap against said one end of the block and against the previously folded side flaps and bottom flap during the movement of the platform toward the turret, and to simultaneously advance toward the turret to push the completely folded block off of the platform and into a partially folded blank in a turret pocket, and

(g) means for sequentially supplying cardboard collar blanks for each block, means on the platform for receiving and retaining a collar blank in a position extending laterally across the block during the movement of the platform toward the turret, and movable mouthpiece means disposed in the path of movement of the platform adjacent the turret for guiding the blocks to the turret and for folding down side flaps of the collar blank.

4,308,709

APPARATUS FOR FORMING PAPER BOXES AND THE LIKE

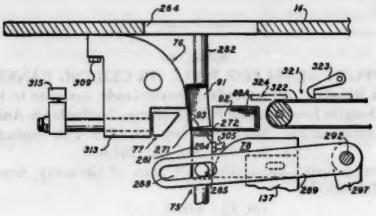
Donald F. Williams, 15 W. Mason St., Santa Barbara, Calif. 93102, and Charles L. Phy, Rte. 2, Box 143, McEwen, Tenn. 37101

Division of Ser. No. 786,955, Apr. 12, 1977, Pat. No. 4,194,441. This application Jan. 30, 1980, Ser. No. 116,899

Int. Cl.³ B65B *11/20*

U.S. Cl. 53—207 **2 Claims**

1. Apparatus for forming a folded box from a blank having a hinge panel joining cover and receptacle sections, with each section having end and side flaps, and comprising means for forming the blank into a tray, means for joining the end and side flaps at the junctures thereof, tray folding elements, and means for grasping said formed tray at the hinge panel and carrying said tray into engagement with said folding elements to bend along said hinge panel said cover and receptacle sections to close said cover and receptacle sections to define a closed box.



4,308,710

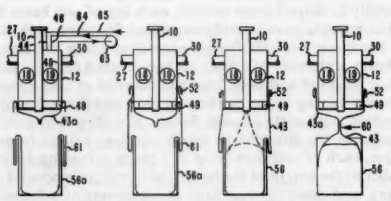
PROCESS AND APPARATUS FOR PACKAGING

Harry W. Sandberg, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 6, 1979, Ser. No. 45,960

Int. Cl.³ B65B *31/06, 31/02*

U.S. Cl. 53—433 **8 Claims**



1. A process for packaging a product material comprising:

(a) attaching an air-impermeable bag in essentially airtight engagement around an open lower end of an enclosed product filling chamber;

(b) filling the bag with said product from within the chamber;

(c) sealing the filled bag at a point intermediate the product in the bag and the lower end of the chamber;

(d) cutting the bag seal thereby creating a sealed bag segment attached to the lower end of the chamber and a sealed filled bag;

(e) removing the sealed filled bag;

(f) placing a second air impermeable bag over the bag segment and attaching the second bag in essentially airtight engagement around the lower end of the chamber above where the bag segment is attached to the lower end of the chamber; and

(g) removing the bag segment from the inside of the chamber.

4,308,711

PACKAGING APPARATUS AND TECHNIQUES FOR FORMING CLOSURE-TOPS

Reid A. Mahaffy, Montclair, and Walter A. Mainberger, Wayne, both of N.J., assignors to Mahaffy & Harder Engineering Co., Totowa, N.J.

Division of Ser. No. 971,997, Dec. 21, 1978, Pat. No. 4,201,030, which is a continuation of Ser. No. 822,088, Aug. 5, 1977, abandoned. This application Oct. 10, 1979, Ser. No. 83,370

Int. Cl.³ B65B *31/02*

U.S. Cl. 53—511 **3 Claims**

1. Packaging apparatus for making packages of the type

having a receptacle cup of packaging material formed with flanges around the mouth thereof, and a top closure of packaging material sealed to said flanges; said apparatus comprising:

first and second packaging stations;

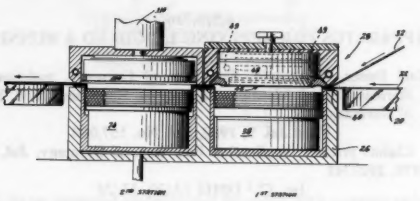
conveyor means for carrying a series of flanged cups through said first and second stations;

means to supply a web of packaging material over said cups before they enter said first station;

initial seal means at said first station for heat-sealing said web to the cup flanges at least substantially around the mouth thereof;

evacuating and final seal means at said second station comprising upper and lower members which are relatively reciprocable into a closed position surrounding a receptacle cup and a portion of said web heat-sealed thereto, said upper and lower members defining a sealed chamber for evacuating the interior of the cup;

said upper and lower members comprising vertical wall means with engageable mating flat surfaces serving in said



closed position as clamp means to grip the flange regions of a receptacle cup within said chamber and press them against said web;

said mating surfaces being stationary relative to the receptacle cup and comprising means to squeeze together and tightly compress the facing portions of packaging material at said flange regions to effect a smoothing of the surface of the packaging material while the receptacle cup is stationary relative to said second station;

at least one of said wall means being formed with internal passages close to the corresponding mating surface thereof and arranged to carry cooling water to remove heat from said flange regions while they are held tightly compressed together in smoothed condition by said flat mating surfaces, said water-cooled surface chilling the parts of said flange regions which were heat-sealed in said first station so as to effect setting of the seal thereof while the material is in compressed smoothed condition, whereby to produce a package with a superior flat undistorted flange.

4,308,712

CARTON BLANK FOLDING APPARATUS

Hans Hagedorn, 4470 - 272nd St., Aldergrove, British Columbia, Canada (V0X 1A0)

Filed Feb. 4, 1980, Ser. No. 118,271
Int. Cl.³ B65B *41/06, 47/10*
U.S. Cl. 53—566 **30 Claims**

1. Apparatus for folding carton blanks having a bottom panel, side walls, side end flaps and bottom end flaps, comprising:

supporting means in a forming section,

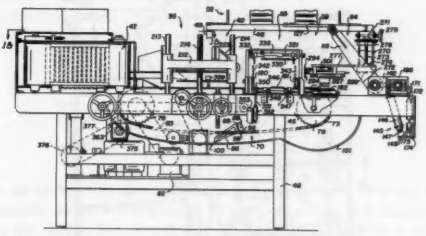
a hopper at the forming section above the supporting means for holding a stack of substantially flat carton blanks,

vacuum means for engaging while in an operative attitude the lowermost blank of the stack in the hopper and moving said engaged blank downwardly through a passageway between the hopper and the support means into a loading position on the supporting means,

forming means beside the passageway for engaging side portions of the blank being moved downwardly through the passageway to incline said side portions into a partially formed carton in the configuration of an outwardly expanding U while leaving an end of the carton open,

a carrier for the vacuum means for moving said vacuum means between the hopper and the supporting means,

control means for the vacuum means for moving said vacuum means after a blank has been deposited in the loading position on the supporting means to an inoperative posi-



tion to a first side of the passageway clear of the deposited blank and moving said vacuum means past the deposited blank and back to the operative position after the vacuum means is moved above said deposited blank, and

means defining a path for moving a load of articles horizontally through a second side of the passageway and through said open carton end onto the bottom panel of the deposited blank within the U formation thereof.

4,308,713

HYDRAULICALLY DRIVEN MOWER

Ronald N. James, Seguin, Tex., assignor to Terrain King Corporation, Seguin, Tex.

Filed Apr. 28, 1980, Ser. No. 144,312
Int. Cl.³ A01D *69/00, 73/00, 55/264*
U.S. Cl. 56—11.9 **7 Claims**

1. A hydraulically driven rotary mower comprising:

a deck member;

at least two hydraulic motors;

rotary cutting blade means operatively connected to said hydraulic motors and positioned adjacent said deck member wherein air flow generated by rotation of said blade means impinges upon said deck member;

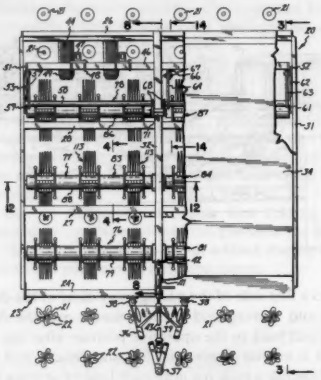
hydraulic fluid conduit means for circulating hydraulic fluid operatively connecting said hydraulic motors with a source of hydraulic pressure wherein said hydraulic fluid conduit means is in contact with said deck member to provide sufficient heat transfer from the hydraulic fluid to the deck member whereby the contacting relation of said hydraulic fluid conduit means and said deck member serves as a heat transfer means for transferring sufficient heat from hydraulic fluid circulating in said hydraulic fluid conduit means to said deck member which deck member serves as heat dissipation means by utilizing the air flow from the blade means for cooling to prevent overheating and damage to the hydraulic fluid.

4,308,714

THREE DRUM DEFOLIATOR

Donald C. Gates, Fargo, N. Dak., assignor to Alloway Manufacturing, Inc., Fargo, N. Dak.

Filed Jun. 28, 1979, Ser. No. 52,756
Int. Cl.³ A01D 23/02
U.S. Cl. 56—121.43 41 Claims



1. A machine for removing foliage from a root crop, such as sugar beets, comprising: a frame having side walls located along opposite sides of the machine, ground engaging wheel means connected to the frame to support the frame above the ground, first rotor means extended from each side wall toward the longitudinal center of the machine, means rotatably mounting the first rotor means on each side wall, a first gear box secured to the frame and drivably connected to the second rotor means, third rotor means extended from each side wall toward the longitudinal center of the machine, means rotatably mounting the third rotor means on each side wall, a third gear box secured to the frame and drivably connected to the third rotor means, each of said rotor means having foliage removing members operable to remove the foliage from the root crop during rotation of the rotor means, and power transmission means connected to the first, second, and third gear boxes operable to rotate each of said rotor means, said power transmission means including a main drive shaft, and first drive means connecting the main drive shaft to the first and second gear boxes, and second drive means connecting the second gear box to the third gear box.

4,308,715

SPINNING RING MADE FROM STEEL FOR RING SPINNING AND RING TWISTING MACHINE

Gustav Staehli, Winterthur, Switzerland, assignor to Rieter Machine Works Ltd., Winterthur, Switzerland

PCT No. PCT/EP79/00067, § 371 Date May 25, 1980, § 102(e) Date May 15, 1980, PCT Pub. No. WO80/00718, PCT Pub. Date Apr. 17, 1980
PCT Filed Aug. 31, 1979, Ser. No. 196,482
Int. Cl.³ D01H 7/60; C21D 9/40
U.S. Cl. 57—119 21 Claims

1. A spinning ring fabricated from steel for ring twisting machines, comprising:

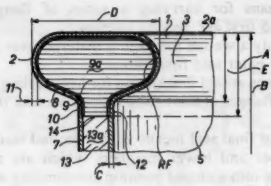
a traveller guide surface provided for said spinning ring;

said spinning ring containing a hardened structure formed of steel;

said spinning ring containing a hardened zone which includes said traveller guide surface;

said hardened zone comprising an outer running-in layer which contains nitrogen;

said outer running-in layer being softer in comparison to the hardened steel of the spinning ring; and



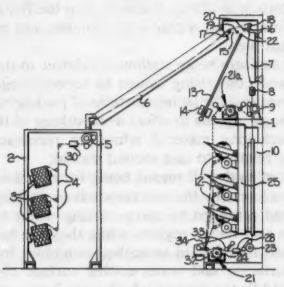
the hardness of said outer running-in layer increasing over the cross-section of said spinning ring from the outside towards the inside thereof.

4,308,716

APPARATUS FOR APPLYING LIQUID TO A RUNNING YARN

Karl Bauer, Remscheid, Fed. Rep. of Germany, assignor to Barmag Barmer Maschinenfabrik AG, Remscheid, Fed. Rep. of Germany

Filed Jul. 9, 1980, Ser. No. 167,059
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1979, 2927741
Int. Cl.³ D01H 13/20, 13/26
U.S. Cl. 57—286 6 Claims



1. A false twist yarn crimping machine having a frame, means for mounting a plurality of yarn delivery bobbins to the frame, means for feeding each of said yarns through one of a plurality of false twisting stations disposed in side-by-side relation along the length of said frame, means for winding the yarns received from said false twisting stations onto take-up spools, and means for applying a liquid to each of the yarns upon leaving the false twisting station and prior to being wound onto the take-up spools, the improvement wherein said means for applying a liquid to each of the yarns comprises

a shaft rotatably mounted to said frame and extending horizontally along the length thereof,

a roller fixedly mounted to said shaft in association with each of said false twisting stations, each roller having a circumferential surface composed of alternating lands and grooves in the circumferential direction,

means for rotating said shaft and thus each of said rollers, and so that the linear speed of the advancing yarn is substantially greater than the peripheral speed of said rollers,

means for guiding each yarn so as to contact the lands of the associated roller in a generally tangential direction and along a predetermined portion only of the circumferential surface of the associated roller, and

means for applying a liquid to the circumferential surface of each roller during rotation thereof,

whereby movement of the running yarn along the circumferential surface of the rotating roller results in the liquid being delivered to the yarn with low frictional resistance being imparted to the yarn.

4,308,717

DUST REMOVING MECHANISM IN OPEN-END SPINNING FRAME

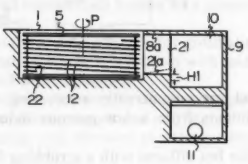
Keiji Onoue, Kariya; Takashi Katoh, Toyoda; Yoshiaki Yoshida, Obu, and Kazuo Seiki, Kariya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Feb. 13, 1980, Ser. No. 121,015

Claims priority, application Japan, Feb. 19, 1979, 54/20976[U]

Int. Cl.³ D01H *7/885, 11/00*

U.S. Cl. 57—301 **3 Claims**



1. In an open-end spinning unit provided with a casing and a combing roller rotatably mounted in said casing, a spinning rotor producing a twisted yarn from individual fibers carried from a combing zone defined by said combing roller, a carrying space of fibers formed between a rotational surface of said combing roller and an inside surface of said casing partly surrounding said combing roller, a dust removing mechanism communicated to said carrying space for discharging dust particles separated from useful fibers being carried to said spinning rotor, said combing rotor provided with a plurality of combing elements helically mounted on a cylindrical surface of a main body of said combing roller in a left hand screw or a right hand screw condition, an improved dust removing mechanism comprising a dust removing aperture communicated with said fiber carrying space, said dust removing aperture provided with top and bottom inside surfaces, either one of said top and bottom inside surfaces positioned at a side corresponding to the direction of progress of an imaginary right hand screw or an imaginary left hand screw when those screws are turned counter clockwise being projected inward to a level corresponding to a plane defined by a rotational trace of either one of terminal ends of said helical arrangement of said combing element which is positioned at said progressing side, while the other one of said top and bottom inside surfaces being formed at a level corresponding to a plane defined by a side of said combing roller.

4,308,718

BLEEDOFF OF GAS FROM DIFFUSERS IN FLUID FLOW MACHINES

Jan Mowill, Rugdeveien 7, Oslo 3, Norway

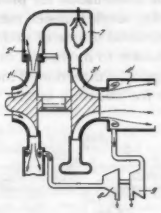
Filed Dec. 27, 1978, Ser. No. 973,609

Claims priority, application Norway, Jan. 2, 1978, 780010

Int. Cl.³ A02C *7/00*

U.S. Cl. 60—39.02 **1 Claim**

1. In a method of stabilizing the flow of a working medium in a gas turbine engine, having a compressor with a compressor diffuser and a turbine with an exhaust gas diffuser and wherein the turbine drives the compressor by a common shaft, by bleeding off a part of the working medium from a boundary layer, or vortex flow, in the engine, the improvement whereby the total efficiency of the machine is improved comprising bleeding off a part of the working medium from a first boundary layer, or vortex flow, from said compressor diffuser, bleeding off part of the working medium from a second boundary layer, or vortex flow, from said exhaust gas diffuser at lower pressure than said first boundary layer, coupling said bleedoffs by feeding said working fluid from said compressor diffuser to



an air turbine to drive said air turbine thereby, driving an auxiliary pump or compressor by said air turbine, and connecting the suction line of said auxiliary pump or air turbine to said exhaust gas diffuser.

4,308,719

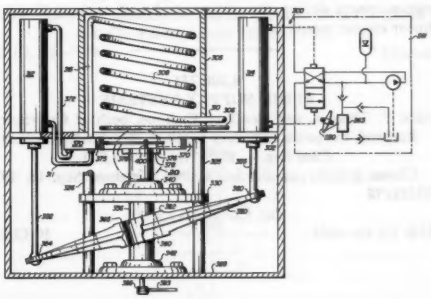
FLUID POWER SYSTEM

Daniel P. Abrahamson, 3030 N. 56th Dr., Phoenix, Ariz. 85301

Filed Aug. 9, 1979, Ser. No. 65,136

Int. Cl.³ D01H *3/12*

U.S. Cl. 60—325 **8 Claims**



1. A power conversion system for converting steam power to hydraulic fluid power comprising :

(a) a base;

(b) at least a linear steam cylinder and a linear hydraulic cylinder radially disposed on said base in generally parallel alignment for pumping hydraulic fluid;

(c) steam generating means intermediate said steam and hydraulic cylinders;

(d) a wobble-type connecting plate pivotally connected to the ends of the cylinder rods and being pivotal about a point centrally located between said cylinders whereby said hydraulic cylinder is oppositely actuated as said steam cylinder is powered on a one-to-one relationship; and

(e) valving means actuated by said connecting plate for directing steam into and out of said steam cylinder.

4,308,720

LINEAR ENGINE/HYDRAULIC PUMP

Jack M. Brandstadter, Royal Oak, Mich., assignor to Pneumo Corporation, Boston, Mass.

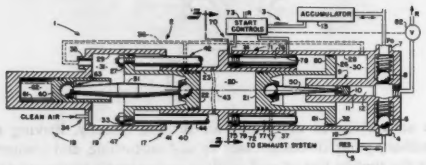
Filed Nov. 13, 1979, Ser. No. 93,371

Int. Cl.³ F02B *71/04*

U.S. Cl. 60—595 **19 Claims**

1. A linear engine pump, comprising pump means for pumping fluid, power engine means for producing output work to

operate said pump means during a power stroke, and supplemental linear engine means for producing output work to operate said power engine means during a compression stroke of the latter, said power engine means comprising an engine cylinder, a pair of piston means movable in opposite directions in response to internal combustion for producing output work during a power stroke, work transfer means for transferring some of the work delivered to one of said piston means to the other of said piston means to move said other piston means in said cylinder in the opposite direction of movement of said one piston means, means for coupling output work directly only



from said other piston means to said pump means for pumping fluid using the combined output work of said piston means transmitted to said pump means only through said other piston means, and means for coupling the remaining output work of said one piston means directly from said one piston means to said supplemental linear engine means during the power stroke of said power engine means and the compression stroke of said supplemental linear engine means, and for coupling output work from said supplemental linear engine means to said one piston means during the power stroke of said supplemental linear engine means.

4,308,721

FLUID SUPPLY SYSTEMS

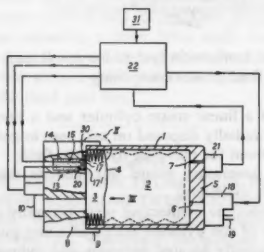
Alan V. Thomas, and Geoffrey E. Bone, both of Crowthorne, England, assignors to Sperry Limited, Bracknell, England

Filed Sep. 4, 1979, Ser. No. 71,961

Claims priority, application United Kingdom, Sep. 18, 1978, 37221/78

Int. Cl.³ F01B *29/00*

U.S. Cl. 60—634 **10 Claims**



1. A fluid suppiy system comprising:

a chamber having an inlet means and an outlet means;

a container having an ignitable solid propellant, coupled to said chamber inlet means for providing a supply of pressurized gas;

a partition responsive to the pressurized gas, positioned to divide said chamber into at least a first portion for receiving the pressurized gas and a second portion for receiving a liquid; and

means for controlling the ignition of the solid propellant, which includes a pressure sensor within said chamber and means for igniting the solid propellant in response to the pressure sensor.

4,308,722

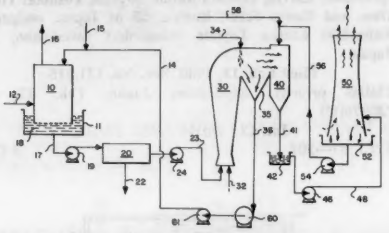
RECOVERY OF ENTHALPY FROM HOT INDUSTRIAL EFFLUENTS

Alberto E. Molini, 5335 Beeler St., Pittsburgh, Pa. 15217, and Clarence Zener, 3955 Bigelow Blvd., Pittsburgh, Pa. 15213

Filed Jun. 8, 1979, Ser. No. 46,668

Int. Cl.³ F01K *21/06*

U.S. Cl. 60—646 **25 Claims**



1. A method for concurrently recovering enthalpy and removing pollutants from a hot gaseous industrial effluent comprising:

a. spraying the hot effluent with a scrubbing fluid to entrap within the fluid pollutants from the effluent,

b. collecting the scrubbing fluid,

c. cleansing the entrapped pollutants from the scrubbing fluid,

d. conducting the scrubbing fluid into a flashing unit having an inlet and outlet and operating with a pressure differential between its inlet and its outlet such that the differential will induce flow within it,

e. forming the scrubbing fluid into a foam,

f. permitting the foam to flow within the flashing unit,

g. separating the foam into its liquid and vapor phases,

h. conducting the liquid phase to a turbine means,

i. recovering the liquid phase,

j. condensing the vapor to maintain the pressure differential, and

k. recovering the condensed vapor.

4,308,723

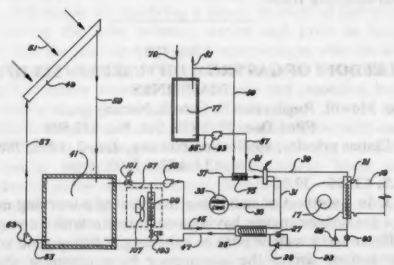
HEAT PUMP EMPLOYING OPTIMAL REFRIGERANT COMPRESSOR FOR LOW PRESSURE RATIO APPLICATIONS

Amir L. Ecker, Dallas, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jun. 21, 1979, Ser. No. 50,548

Int. Cl.³ F25B *27/00*

U.S. Cl. 62—235.1 **22 Claims**



1. An apparatus for heating a fluid comprising:

a. fluid handler and fluid path means for circulating said fluid in a path in heat exchange relationship with a refrigerant fluid;

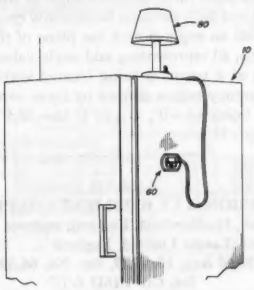
b. a first refrigerant-fluid heat exchanger disposed in said path of said fluid such that said fluid is passed in heat exchange therewith;
c. a second refrigerant-heated fluid heat exchanger for circulating said refrigerant in heat exchange relationship with a nonambiently heated fluid to effect high evaporator temperatures and resulting high suction pressure;
d. a rotary compressor having a single suction pressure intake location for efficiently compressing said refrigerant with low power consumption at said high evaporator temperatures and resultant low pressure ratio;
e. at least one throttling valve connected at the heating inlet side of said second heat exchanger;
f. a refrigerant circuit serially connecting said first heat exchanger, throttling valve, second heat exchanger, and compressor and defining a flow path for said refrigerant;
g. refrigerant disposed in said refrigerant circuit and adapted to be circulated for transferring heat with respect to said fluid;
h. a source of heated fluid heated to a temperature greater than ambient;
i. heated fluid circulating means for circulating said heated fluid in heat exchange relationship with said refrigerant in said second heat exchanger;
j. heated fluid circuit serially connecting said heated fluid source, circulating means and said second heat exchanger for providing said elevated evaporator temperatures for heating.

4,308,724

RANDOMLY ACTIVATED OUTLET

Nicholas M. La Ginestra, 67 Diamond St., Elmont, Long Island, N.Y. 11003

Filed May 5, 1980, Ser. No. 147,369
Int. Cl.[3] F25B *49/00*; G08B *17/00*
U.S. Cl. 62—126 **1 Claim**



1. A randomly activated electrical power supply means to which various electrical appliances, such as radios, televisions, lamps, etc., may be conveniently attached so as to be randomly activated at the same time said electrical power supply means is activated, thereby to give the illusion of a dwelling being occupied while its inhabitants are away, thus to dissuade burglars and other people from gaining unauthorized entry thereinto, said randomly activated electrical power supply means comprising:

refrigeration means having a refrigerator storage section, said refrigeration means including an electrically powered compressor means for supplying refrigerant to said refrigerated storage section so as to maintain a desired temperature therein;

thermostat means operably associated with said refrigeration means and being selectively operable to sense a temperature of said refrigerated storage section, said thermostat means further being operable to permit a supplying of operating electrical power to said compressor means when a sensed temperature of said refrigerated storage section rises above said desired temperature, said thermostat means being in series electrical communication with said compressor means so as to selectively control said supplying of said operating electrical power thereto; and

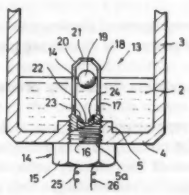
electrical outlet means in parallel electrical communication with said compressor means so as to be concurrently provided with said operating electrical power when said compressor means is provided with said operating electrical power and having no operating electrical power provided thereto when said compressor means is not provided with operating electrical power, said operating electrical power supplied to said electrical outlet means being of a random nature inasmuch as such operating electrical power is supplied to said compressor means as a function of unpredictable temperature variations within said refrigerated storage section, thereby to randomly supply operating electrical power to said electrical appliances, such as said radios, televisions, lamps, and the like, which are selectively electrically connected to said electrical outlet means, said electrical outlet means being disposed on an exterior surface of said refrigeration means and facing outwardly from an outside wall of said refrigeration means so as to be accessible to exteriorly positioned electrical appliances.

4,308,725

REFRIGERANT QUANTITY DETECTING DEVICE FOR AIR CONDITIONING OF VEHICLES

Tsuneyuki Chiyoda, Matsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Mar. 20, 1979, Ser. No. 22,377
Claims priority, application Japan, Apr. 26, 1978, 53/55764
Int. Cl.[3] G01K *13/00*; H01H *35/18*
U.S. Cl. 62—129 **7 Claims**



1. A device for detecting a refrigerant quantity circulating in an air conditioner having a refrigerant circuit and a refrigerant receiver disposed upright across the refrigerating circuit for temporary storage of the refrigerant, the device comprising:

a sensor which includes a body having an integral threaded base portion threadedly fitted in the refrigerant receiver through a bottom thereof, a hollow portion integral with said threaded base portion and extending from the threaded base portion inwardly of the receiver, said hollow portion having an open interior so as to permit the refrigerant in the refrigerant receiver to flow into said hollow portion to a level substantially even with the refrigerant level in the refrigerant receiver; a pair of electrodes disposed on an inner end wall of said hollow portion; and a floating element disposed within said hollow portion, said floating element being made of an electrically conductive material having a specific gravity a little smaller than that of the refrigerant; and

an alarm means including an electric circuit electrically connected with said electrodes of said sensor, said alarm means comprising a differential amplifier having two input terminals and an output terminal; means for applying a fixed electric voltage to one of said input terminals of said differential amplifier; a circuit with a predetermined time constant coupled to said electrodes of said sensor and arranged to apply an electric voltage which is variable in

response to the action of said sensor to the other input terminal of said differential amplifier; and indicating means substantially directly connected to said output terminal of said differential amplifier for actuation in response to an output from said differential amplifier to indicate when the refrigerant level in said refrigerant receiver falls below a given level.

4,308,726

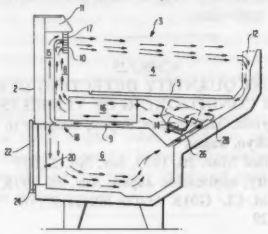
OPEN TOP REFRIGERATED DISPLAY CASE WITH STORAGE SECTION

Arthur Perez, Niles, Mich., and Fayez F. Abraham, Niles, Mich. (now by change of name Fayez F. Ibrahim), assignors to Tyler Refrigeration Corporation, Niles, Mich.

Continuation-in-part of Ser. No. 8,111, Jan. 31, 1979. This application Mar. 30, 1979, Ser. No. 25,350

Int. Cl.³ A47F *3/04*

U.S. Cl. 62—256 **35 Claims**



1. An open top refrigerated display case comprising:

an upper display portion for displaying products to be refrigerated;

a lower storage portion for storing products to be refrigerated;

a wall member separating said upper and lower portions;

cooling means for cooling both said display portion and said storage portion of said display case, said cooling means including means for establishing a first air band encircling said display portion, said means for establishing said first air band including a first air conduit provided around said display portion of said display case, said first air conduit having a first air outlet through which air can be expelled from said first air conduit and a first air inlet through which air can enter said first air conduit with said first air outlet and said first air inlet being located at opposite ends of said displaying case so as to direct air across the opening in the top of said display case and in alignment so that air leaving said first air outlet is directed towards and received by said first air inlet, first air circulating means for circulating air along said first air conduit during a refrigeration cycle such that air is expelled from said first air outlet and received by said first air inlet thereby establishing a first air curtain across the opening in the top of said display case, and refrigeration means for refrigerating air of the first air band passing along said first air conduit during the refrigeration cycle of operation of said display case so as to form a refrigerated air band; and

first means for diverting a portion of the refrigerated air band from said first air conduit before such air passes through said refrigeration means so as to prevent such portion of air from passing through said refrigeration means and enabling such air to pass from said first air conduit into said storage portion for cooling said storage portion.

4,308,727

BRILLIANT-CUT STONE

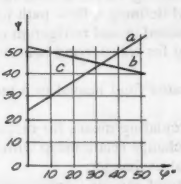
Maximo Elbe, Hebbelstrasse 8, 2 Hamburg 22, Fed. Rep. of Germany

Continuation of Ser. No. 863,166, Dec. 22, 1977, abandoned, which is a continuation of Ser. No. 688,293, May 20, 1976, abandoned, which is a continuation of Ser. No. 486,088, Jul. 5, 1974, abandoned, which is a continuation-in-part of Ser. No. 256,912, May 25, 1972, abandoned. This application Aug. 10, 1979, Ser. No. 65,554

Claims priority, application Fed. Rep. of Germany, May 28, 1971, 2126572

Int. Cl.³ A63H *17/00*

U.S. Cl. 63—32 **12 Claims**



1. An improved jewel made of diamond having a refractive index of 2.4175 and being of brilliant-cut type having a girdle, having a planar table located above and parallel to the plane of the girdle, having a pavilion located beneath the girdle and comprising a circumferential succession of pavilion facets, and having a bezel comprising a first annular region of first bezel facets extending from said girdle towards said table and a second annular region of second bezel facets extending from said first annular region towards said table,

the improvement wherein:

each second bezel facet forms an angle ϕ with the plane of the table and each pavilion facet below each second bezel facet forms an angle ψ with the plane of the girdle,

the points (ϕ, ψ) representing said angle-value combinations in a plot of ψ versus ϕ being located within a triangular intransparency region defined by three vertices, the three vertices being $(\phi=0°, \psi=24°)$, $(\phi=32.5°, \psi=44°)$ and $(\phi=0°, \psi=52°)$.

4,308,728

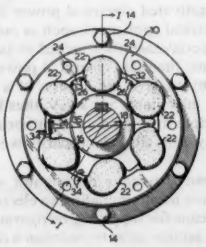
TORSIONALLY RESILIENT COUPLING

Louis P. Croset, Huddersfield, England, assignor to Engineering Development (Leeds) Limited, England

Filed Aug. 14, 1979, Ser. No. 66,393

Int. Cl.³ F16D *3/17*

U.S. Cl. 64—11 R **4 Claims**



1. In a torsionally resilient coupling comprising two concentric members each exhibiting co-operating grooves forming block cavities, a plurality of solid cylindrical blocks of resilient material accommodated within said cavities for transmitting torsional forces applied to one of said concentric members to

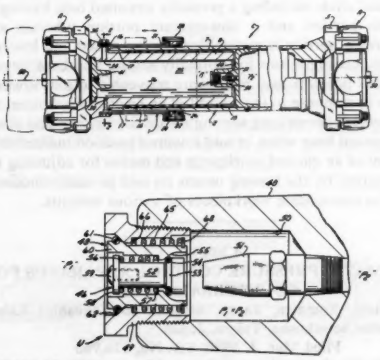
the other concentric member, and end plates defining the axial extent of said cavities and preventing axial deformation of said blocks of resilient material at each end on loading thereof; the improvement wherein each of said grooves is defined by a central section which extends along an arc of a circle and whose entire surface is in contact at all times with the associated solid cylindrical block of resilient material, said central section developing at each end thereof into a straight flank extending tangentially relative to said circle and at an angle to a diametrical plane of said circle, said blocks each having a diameter dimensioned such that said blocks contact said flanks only under torque load conditions, said blocks being subjected only to radial deformation under said torque conditions due to being equal in length to that of the cavity into which their diameter is a light driving fit, and wherein said angle of each said tangential flank is such as to provide the desired torsional deflection and coupling stiffness, a relatively small angle providing a low torsional deflection and high stiffness, and a larger angle providing a higher torsional deflection and lower stiffness.

4,308,729

UNIVERSAL JOINT SLIP SPLINE CONNECTION HAVING CONCENTRIC ONE-WAY VALVES

William T. Condon, Rockford, Ill., assignor to Twin Disc, Incorporated, Racine, Wis.

Filed Apr. 2, 1980, Ser. No. 136,704
Int. Cl.³ F16D *3/06*
U.S. Cl. 64—23 **12 Claims**



1. A universal joint slip spline connection including a pair of concentric telescoping members which relatively extend and contract and define a pumping chamber therebetween, a dual valve unit located between said pumping chamber and the exterior of said connection, said unit including two concentrically arranged, one-way air valves which act to check the flow of air in opposite directions to thereby permit flow of air into the chamber when said connection is being extended and permit the flow of air out of the chamber with the connection is being compressed, said concentrically arranged valves being located on the rotational axis of said connection.

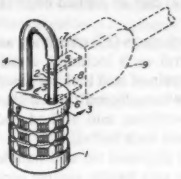
4,308,730

ELECTRICAL PLUG LOCKING DEVICE

Donald P. Roth, 800 Lost Acre Dr., Felton, Calif. 95018

Filed Mar. 17, 1980, Ser. No. 130,716
Int. Cl.³ E05B *67/06*
U.S. Cl. 70—53 **5 Claims**

1. In a padlock having a socket and a shackle, the improvement comprising a straight length of the shackle adapted to be received in the socket having a diameter less than the diameter of the openings in live tines of a standard electrical plug, and a



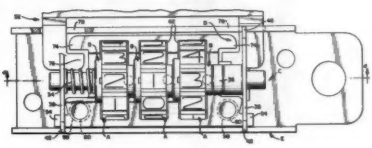
length greater than the distance between the outer surfaces of the tines.

4,308,731

COMBINATION LOCKS

Richard C. Remington, Pompton Plains, N.J., assignor to Presto Lock Company, Division of Walter Kidde & Company, Inc., Garfield, N.J.

Filed Apr. 26, 1979, Ser. No. 33,540
Int. Cl.³ E05B *15/14, 37/02, 65/48*
U.S. Cl. 70—74 **23 Claims**



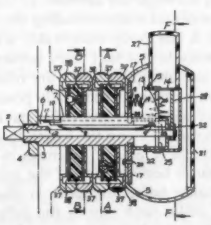
1. A combination lock having a plurality of dials, each coupled to a corresponding rotary camming element having a periphery that is circular except for a peripheral portion that must be turned to a predetermined position relative to cooperable camming means to permit the lock to be opened and wherein movement of the cooperable means to close the lock is effected by mutual camming engagement between a camming element and said cooperable means, characterized in that the peripheral portion has a notch and the cooperable means has a ridge portion for each notch, the ridge portions being received in the notches, respectively, when the notches have said predetermined position.

4,308,732

ADJUSTABLE DIGITAL LOCK

Luo C. Hau, No.21, Sec. 1, Ho-Ping E. Rd., Taipei, Taiwan

Filed Oct. 31, 1979, Ser. No. 90,031
Int. Cl.³ E05B *13/10*
U.S. Cl. 70—213 **8 Claims**



1. An adjustable digital lock comprising in combination: a lock barrel (1) having a terminus (2) adapted to latch and unlatch a lock tongue,

a locking piece (7) disposed along an axial face of said barrel and separated therefrom by a plate spring (8),

said locking piece having a tip (10) adapted to encounter a stop block (12) and an arched edge (13) remote from said tip,

a plurality of lock rings (37) overlying said locking piece and said lock barrel each including a radial key slot (46) for migration therein of said locking piece by the force of said plate spring when aligned therewith,

a handle (5) overlying said arched end and an associated segment of said lock barrel,

a push key (27) disposed on said handle adapted to be displaced within said handle against spring pressure,

said push key adapted to coact against said arched edge translating said locking piece axially when said locking piece is within said radial key slot thereby causing said tip to ride over said stop block.

4,308,733

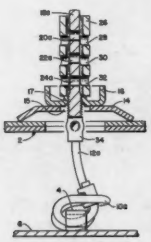
SECURITY DEVICE FOR AUTOMOBILE SPARE TIRES

George R. Tampa, 1935 Midland, Highland Park, Ill. 60035

Filed Nov. 16, 1978, Ser. No. 961,121

Int. Cl.[3] B62D *43/06;* E05B *67/38, 73/00;* F16B *39/08*

U.S. Cl. 70—259 3 Claims



1. A security device for a spare tire including a body portion having hook-shaped anchoring means at one end to permit nonrotative removable attachment of said body portion to a complementary base element in the trunk of a vehicle, said body portion at its other end being provided with a pair of helical thread sections on opposite surfaces of the periphery of said body portion, each helical thread section is separated from the other by a pair of flattened surfaces provided on said body portion, and a series of spaced apertures provided in the flattened surfaces of said body generally normal to the longitudinal axis of said body portion, said body portion of said device, when cooperating with the complementary base element in the trunk of a vehicle, is adapted to be positioned to pass upwardly through the complementary aperture in a tired wheel, an apertured cover plate adapted to overlie the complementary aperture of said tired wheel with the other end of said body portion passing upwardly through the aperture of said plate with the threaded portions of said body extending through and beyond said cover plate, a nut body cooperable with the threaded portion of said body to put said body portion in tension and thereby position and clamp the spare tire relative to the trunk of the vehicle, and a collar telescopically positioned relative to the end portion of said body, said collar having a plurality of pairs of apertures spaced along the length thereof, the spacing between each successive pair of apertures in the collar being less than the distance between any of the spaced apertures in the body, said collar being rotatable to align a pair of the apertures in the collar with one of the differentially spaced holes in the body and adapted to generally overlie said nut body in close proximity, and a locking element passed through the aligned apertures in the said body portion and said collar to prevent upward movement of said nut relative to said body portion and the clamped tired wheel assembly.

4,308,734

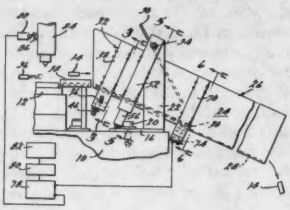
WORKPIECE DETECTION DEVICE FOR CYCLICAL MACHINES

Charles R. Senft, Lancaster, Pa., assignor to Federal-Mogul Corporation, Southfield, Mich.

Filed Apr. 18, 1980, Ser. No. 141,705

Int. Cl.[3] B21J *9/20*

U.S. Cl. 72—3 10 Claims



1. In a cyclically operating machine for performing an operation on successive workpieces including ejection means for ejecting a workpiece after each operating cycle and control means associated with the machine drive means for initiating each operation cycle, a detection device interlocked with the control means for sensing the event of a workpiece having been ejected to enable initiation of the next machine operating cycle, said detection device comprising a chute adapted to be disposed adjacent to machine for receiving an ejected workpiece, said chute including a pivotally mounted base having an upstream portion and a downstream portion wherein said downstream portion is moveable between raised and lowered positions, biasing means for normally urging said base toward said raised position, said base being moveable to said lowered position in response to the weight of an ejected workpiece, the improvement comprising sensing means for sensing said pivotally mounted base when in said lowered position indicative of the event of an ejected workpiece and means for adjusting the force exerted by the biasing means on said pivotally mounted base to accommodate workpieces of various weights.

4,308,735

AUTOMATIC PRESSURE CONTROL APPARATUS FOR COUNTERBALANCER

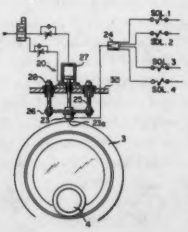
Ikuo Nishi, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Mar. 3, 1980, Ser. No. 126,963

Claims priority, application Japan, Mar. 1, 1979, 54-22558

Int. Cl.[3] B21J *9/20*

U.S. Cl. 72—21 3 Claims



1. In a press machine having a movable portion including a crank for translating rotary motion into linear motion, a connecting rod connected to the crank, a slide connected to the connecting rod, and an upper die detachably mounted on the slide; an automatic pressure control apparatus for a counter-

balancer, comprising: cylinder means mounted on a frame of said press machine, said cylinder means having a piston with a piston rod slidably mounted therein, and a rod-side chamber defined therein, said piston rod being connected to said slide; a pressurized fluid source; tank means for containing pressurized fluid connected at one end thereof with said pressurized fluid source, the other end thereof being connected to the rod-side chamber of said cylinder means; pressurized fluid supply and ventilation control means disposed between said pressurized fluid source and said tank means for controlling the supply and ventilation of the pressurized fluid into and from the rod-side chamber of said cylinder means, said pressurized fluid supply and ventilation control means having pilot operated main regulator valve means for regulating the pressurized fluid flowing therethrough; a plurality of pilot regulator valve means connected with said main regulator valve means for controlling the same; detector means movable into and out of physical contact with the movable portion of the press machine for directly measuring the amount of displacement of a reference point given on the movable portion of the press machine in a preselected posture of the press in response to the interchange of the upper dies with varying weights; and means for selectively operating said pilot regulator valve means in response to a detected signal detected by said detector means whereby the fluid pressure in the rod-side chamber of said cylinder means can be automatically controlled in response to the amount of displacement of the reference point.

4,308,736

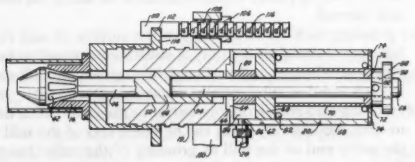
TUBE EXPANDER

Jerome R. Lowe, Seymour, and Frank P. Russo, Waterbury, both of Conn., assignors to J & S Hydraulics, Inc., Milford, Conn.

Continuation-in-part of Ser. No. 1,200, Jan. 5, 1979, Pat. No. 4,198,844. This application Apr. 3, 1980, Ser. No. 136,980

Int. Cl.³ B21D *41/02*

U.S. Cl. 72—36 **6 Claims**



1. A tube expander comprising a segmented expander, an arbor slidably received in said expander for expanding the expander upon movement of the arbor in a first predetermined direction, first means for moving said segmented expander relative to the arbor to establish the amount of expansion of the expander to be permitted, and second means, independent of said first means, for moving said arbor in said first direction to flare a tube end inserted on said segmented expander; said first means comprising a housing having a threaded outer surface and a collar threadedly engaged with said housing and having an outer end engaged with said segmented expander, said arbor being slidably mounted in said housing and extending through said collar; said collar having an inner end including a radially extending flange; at least one marked rod slidably receiving said flange to permit rotation of said flange relative to the rod while moving the rod axially therewith; said rod extending parallel to said arbor and adjacent to a predetermined marker on the housing; said rod having indicia thereon for providing a visual indication of the amount of expansion of the arbor at a given position of the collar on the housing.

4,308,737

APPARATUS FOR PRODUCING A BEAD ON THE PERIPHERY OF A HOLLOW CYLINDER

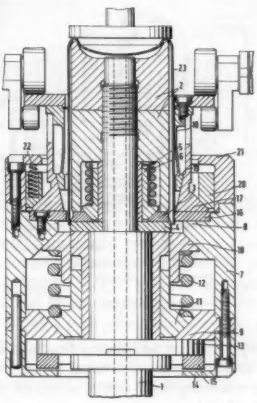
Reinhard Kannegiesser, Birenbach; Rainer Güthle, Ebersbach-Weiler, and Kurt Finsterwalder, Göppingen, all of Fed. Rep. of Germany, assignors to L. Schuler GmbH, Göppingen, Fed. Rep. of Germany

Filed Nov. 2, 1979, Ser. No. 90,614

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1978, 2847736

Int. Cl.³ B21D *19/06, 17/04*

U.S. Cl. 72—91 **8 Claims**



1. Beading apparatus for producing a bead on the periphery of a hollow cylinder, such as a can body, comprising:

an internal tool having a maximum cross-sectional dimension smaller than the inner diameter of the hollow cylinder after it has been beaded,

an external tool in the form of a ring having an inner cross-sectional dimension greater than the outer diameter of the unbeaded hollow cylinder,

means for rotatably driving at least one of said internal and external tools with controlled radial adjustment of said tools with respect to one another so that the hollow cylinder can be rolled and deformed between the outer periphery of the internal tool and the inner periphery of the external tool to form a bead thereon,

and a depressor axially adjacent one of said tools for supporting the hollow cylinder at a location axially adjacent the region where the bead is being formed,

wherein the depressor is formed as a basket with springing tongues separated by axial slots, such spring tongues being movably engagable with a conically tapering surface of a cylinder liner to effect a change in the effective diameter of the basket so that such springing tongues can adjustably closely engage against the periphery of the hollow cylinder during beading operations while being springably movable to a rest position permitting movement of the hollow cylinder to and from the beading apparatus.

4,308,738

ROTARY SNAPPING DEVICE

Riichiro Yoshida, Tokyo, Japan, assignor to Copal Company Limited, Tokyo, Japan

Filed Oct. 16, 1979, Ser. No. 85,318

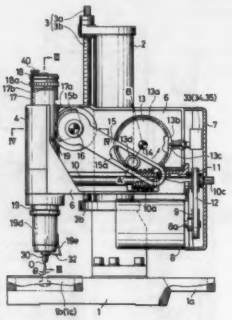
Claims priority, application Japan, Oct. 20, 1978, 53-129226; Nov. 20, 1978, 53-143105; Dec. 18, 1978, 53-157894; Feb. 13, 1979, 54-17044[U]

Int. Cl.³ B21D *15/12*

U.S. Cl. 72—112 **5 Claims**

1. A rotary snapping device comprising a sliding head, a

column supporting said sliding head movably in the vertical direction, a base supporting said column, a driving shaft rotatably mounted on said sliding head, a driving motor fitted to said sliding head and connected to said driving shaft to rotate said driving shaft, a spindle assembly which includes a rotatable spindle therein and which is mounted at right angles with said driving shaft on said sliding head, said spindle being connected to said driving shaft by meshing a first helical gear provided on said driving shaft with a second helical gear which is formed on the outer peripheral surface of said spindle over the moving range of said spindle, a driving wheel which



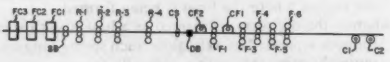
is rotatably supported on said sliding head and is connected to said driving shaft so as to be rotated by the rotation of said driving shaft, a driving lever which is rotatably supported on said sliding head and is operatively connected in one end portion to said driving wheel and in the other end portion to said spindle to move said spindle in the vertical direction, and a snap rotatably supported in a posture inclined with respect to said spindle at the lower end of said spindle, said spindle being made to make one reciprocation between the uppermost position and the lowermost position through said driving lever while said driving wheel makes one rotation.

4,308,739

METHOD FOR MODERNIZING A HOT STRIP MILL

George W. Tippins, Pittsburgh, Pa., assignor to Tippins Machinery Company, Inc., Pittsburgh, Pa.

Filed Jan. 28, 1980, Ser. No. 115,611
Int. Cl.³ B21B *1/02*
U.S. Cl. 72—229 **4 Claims**



1. A method of increasing the productivity of a continuous or semi-continuous hot strip mill including a roughing train for converting a slab to a transfer bar on the order of two inches and a finishing train having a plurality of finishing stands, F-1, F-2, F-3 . . . F-X for converting the transfer bar to a hot rolled strip having a PIW in excess of 600 comprising:

A. eliminating F-2 from the finishing train;

B. converting F-1 to a reversing mill;

C. installing in lieu of F-2 a first coiling furnace having a mandrel coiler therein arranged to receive and coil the transfer bar on a first pass through F-1 in a forward direction; and

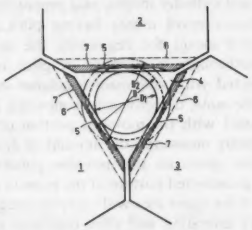
D. installing a second coiling furnace having a mandrel coiler therein upstream of F-1 and which is likewise arranged to receive and coil the transfer bar passing from the first coiling furnace through F-1 in a reverse direction in a second pass.

4,308,740

ROLLING LINES FOR THE ROLLING OF WIRE OR RODS

Hans Brauer, Leichlingen, Fed. Rep. of Germany, assignor to Kocks Technik GmbH & Co., Dusseldorf, Fed. Rep. of Germany

Filed Jan. 7, 1980, Ser. No. 110,249
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1979, 2903358
Int. Cl.³ B21B *1/18, 27/00*
U.S. Cl. 72—234 **3 Claims**



1. A method of operating a rolling line for the rolling of wire or rods, having at least one roughing and/or intermediate block which has, at its entry end, a plurality of rolling stands whose sizing passes are formed by radially non-adjustable rolls, and which has, at its exit end, two or more individually and controllably driven rolling stands having radially adjustable rolls, comprising the steps of:

(a) passing a work material through at least two different series of sizing passes successively in those rolling stands of the roughing and/or intermediate block which have non-adjustable rolls,

(b) providing rolls in each stand of substantially identical diameters and such that the diameters of a notional circle, inscribed in each of the sizing passes, of the second series of sizing passes in each stand being smaller than that of a notional inscribed circle of that sizing pass of the first series of sizing passes which is adjacent to and at the entry side thereof,

(c) grinding each set of rolls when the surface of said rolls becomes unsatisfactory only a sufficient amount to provide a satisfactory roll surface while maintaining all rolls in each stand at substantially equal diameters, and

(d) moving said rolls from one series to the other from time to time successively from the delivery end of the mill to the entry end of the mill as grinding of the rolls changes the notional inscribed circle diameter whereby to maintain a generally desired gradation of the notional inscribed circle diameter in successive stands from entry to delivery end.

4,308,741

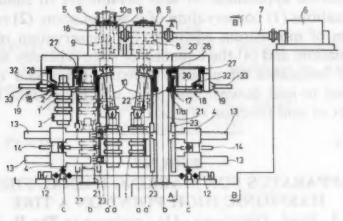
APPARATUS FOR CHANGING ROLLS OF VERTICAL ROLLING MILL STAND

Hikonori Ishii, and Kenichi Ide, both of Yokohama, Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 7, 1980, Ser. No. 109,795
Claims priority, application Japan, Feb. 27, 1979, 54/22155
Int. Cl.³ B21B *31/08*
U.S. Cl. 72—239 **2 Claims**

1. In a roll changing apparatus for a vertical rolling mill stand, wherein a roll gap adjusting system includes means for moving the rolls to a roll change position beyond a given maximum gap adjusting position, the rolls being removable from the mill stand in said roll change position said roll having an upper bearing means provided with an outwardly projecting flange; the improvement comprising: a roll lifting arrange-

ment including a pair of L-shaped plates with horizontal portions adapted to engage said outwardly projecting flange of the upper bearing means of a roll when the roll is moved to said roll change position, guide rails, carriage means movable parallel to the rolling direction of said mill stand on said guide rails, said carriage means having support means with horizontal portions shaped to support a roll at the flange of the upper bearing means thereof, said carriage being movable to a position with the support means thereof aligned with the said roll lifting means, said carriage being above rolls in said roll chang-



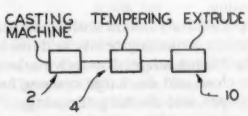
ing position whereby said lifting means is adapted to move rolls vertically from said roll change position to horizontal alignment with the support means of said carriage means, and further comprising a transfer mechanism for transferring rolls between the support means of said carriage and lifting means when the support means of said lifting means is horizontally aligned with the support means of said carriage means, said transfer mechanism comprising engaging means adapted to engage means on the upper bearing means of said roll for moving said roll horizontally.

4,308,742

METHOD OF AND MACHINE FOR EXTRUDING

Nelson K. Harrison, and Dana B. Lamb, both of 6901 W. 30th St., Berwyn, Ill. 60402

Filed Dec. 30, 1976, Ser. No. 755,747
Int. Cl.³ B21C *23/21, 29/02, 35/06, 26/00*
U.S. Cl. 72—253.1 **5 Claims**



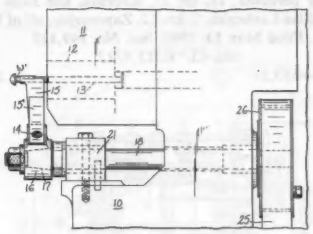
1. The method of extruding which comprises:
(a) casting a billet of an alloy;
(b) cooling the casting to a temperature only sufficiently below its eutectic that the temperature increase, if any, resulting from the passage of the metal through the extrusion die will still leave the being extruded metal close to but always below its eutectic;
(c) the casting operation being performed in a mold which is chilled to accelerate cooling of the casting, retaining it in that mold until it has solidified sufficiently to permit removal from the mold, and then placing the hot billet in a tempering oven to cool it further to and maintain it at the first aforesaid temperature.

4,308,743

BLANK DEFLECTOR

Joseph Pizzuto, 3 Mohawk Dr., Wolcott, Conn. 06716

Continuation of Ser. No. 915,824, Jun. 15, 1978, abandoned.
This application Oct. 1, 1979, Ser. No. 81,036
Int. Cl.³ B21D *45/00*
U.S. Cl. 72—345 **5 Claims**



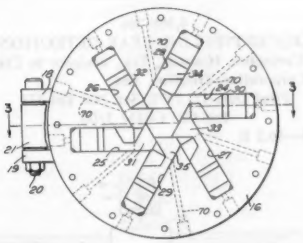
1. In a die forming machine having a machine drive and knockout means for ejecting a blank horizontally from the die to drop by gravity toward a receptacle, a blank deflector comprising an elongated blade having a flexible part mounted on a rigid part, a rotating support to which the rigid part of the blade is secured, and timed means for rotating the deflector in a vertical plane along a path which intersects the position of a blank substantially at the moment of its ejection, the blade being past zenith when it reaches said position, whereby the blank's flight downward toward the receptacle is expedited.

4,308,744

TUBE POINTER

Ellery L. Baker, Warwick, R.I., assignor to United Wire & Supply Corporation, Cranston, R.I.

Filed Feb. 8, 1980, Ser. No. 119,850
Int. Cl.³ B21D *41/04*
U.S. Cl. 72—402 **5 Claims**

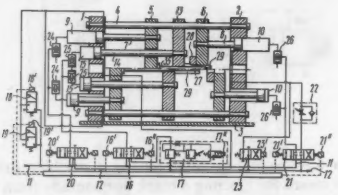


1. A tube pointer comprising a housing having at least an opening in one end, a plurality of pairs of jaw means with opposed work engaging faces, means to simultaneously move the jaw means in said housing in a chordal path, said jaw means comprising a block with parallel side faces, a work-engaging face and a rear face, a longitudinal recess on one side face, said recess having a wall substantially the width and length of the work-engaging face that receives for sliding engagement the work-engaging face of a juxtaposed jaw means whereby the jaw means may completely close the opening at said one end of said housing.

4,308,745
HYDRAULIC PRESS

Evgeny I. Lisitsa, prospekt Lenina, 170 "g", kv. 3; Alexandr M. Gursky, ulitsa Bocharova, 8, kv. 36; Vitaly G. Kuimov, ulitsa Shkolnaya, 25, kv. 44; Jury S. Makazan, ulitsa 40 let Sovetskoi Ukrainy, 68/5, kv. 14; Alexandr V. Paulsky, ulitsa Shkolnaya, 25, kv. 54; Fedor A. Reznichenko, Dnepropetrovskoe shosse, 46, kv. 10, all of, Zaporozhie; Alexandr V. Romanov, Kombainy pereulok, 11, kv. 27, Kherson, and Efim L. Uzorovsky, ulitsa Lezhenko, 7, kv. 12, Zaporozhie, all of U.S.S.R.

Filed May 13, 1980, Ser. No. 149,425
Int. Cl.³ B21J *9/12*
U.S. Cl. 72—453.18 **2 Claims**

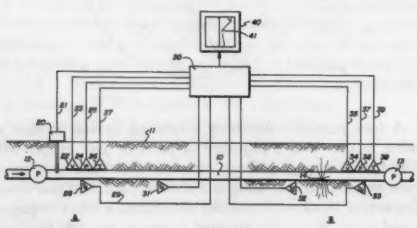


1. In a hydraulic press having a bed, stationary plates mounted on said bed, guiding columns linking said stationary plates, a pair of slides mounted for movement between said stationary plates, double-acting hydraulic cylinders for driving each of said slides of said pair of slides, said cylinders having a piston side and a rod side both connected with a pressure pipeline and a return pipeline through hydraulic distributors, an improvement comprising an intermediate slide located between said slides, a double-acting hydraulic cylinder for driving the above intermediate slide, said cylinder having a piston side connected to said pressure pipeline and return pipeline, and a rod side connected directly to said pressure pipeline, a hydraulic distributor installed between the piston side of the above double-acting hydraulic cylinder of said intermediate slide and the pressure pipeline, a pressure regulator, installed between said hydraulic distributor and return pipeline, the rod side of said hydraulic cylinder of one of said slides is connected to said pressure pipeline, and the piston side to said pressure pipeline and return pipeline through an individual hydraulic distributor of said hydraulic distributors.

4,308,746
LIQUID PIPELINE LEAK DETECTION

Morris T. Covington, Houston, Tex., assignor to Crutcher Resources Corporation, Houston, Tex.

Filed Dec. 17, 1979, Ser. No. 104,371
Int. Cl.³ G01M *3/00*
U.S. Cl. 73—40.5 R **7 Claims**



1. The method of determining the occurrence and magnitude of a leak in a pipeline which comprises:

(a) continuously sensing pipeline parameters including product velocity, pressure and temperature at an upstream point of flow of a product of known composition in said pipeline;

(b) continuously sensing pipeline parameters including product velocity, pressure and temperature at a downstream point in said pipeline;

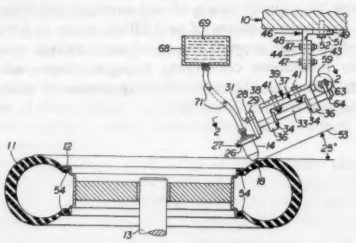
(c) determining the ambient temperature parameter of the material surrounding said pipeline;

(d) plotting as a single valued function of time the mass flow into the pipeline at said upstream point minus mass flow out of the pipeline at said downstream point minus the line pack of product in the pipeline between said points by repeated application of said parameters to simultaneous equations (1) conservation of mass equation, (2) conservation of momentum equation, (3) conservation of energy equation, and (4) the equation of state whereby any product imbalance of product flowing from said upstream point to said downstream point will be evident from the plot of said function of time.

4,308,747
APPARATUS FOR MARKING RADIAL FIRST HARMONIC HIGH POINT ON A TIRE

Eugene L. Reed, Tuscaloosa, Ala., assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Mar. 27, 1980, Ser. No. 134,644
Int. Cl.³ G01M *17/02*
U.S. Cl. 73—146 **2 Claims**



1. In apparatus for marking the radial first harmonic high point on a tire as it is rotated in a horizontal plane on a uniformity machine having sensor means for sensing said radial first harmonic high point:

(a) a depending tubular housing positioned an angular distance of approximately 45° from the receiving end of the uniformity machine as viewed in the direction of rotation of the tire and having a downwardly tapered annular seat at its lower end terminating in a centrally disposed discharge opening,

(b) a ball supported for rotation within said seat and having a lower portion projecting below said discharge opening with said ball being adapted to move selectively toward said seat to close said discharge opening and away from said seat to open said discharge opening,

(c) resilient means within said housing urging said ball toward said seat,

(d) means supplying a marking fluid to said tubular housing,

(e) a shaft supporting said tubular housing above said tire being rotated for travel in a direction to move said ball carried thereby toward and away from said tire with said ball contacting said tire upon movement of said ball toward said tire so that said ball is moved away from said seat to apply said marking fluid onto said tire with said shaft being mounted for rotation about an axis extending radially and upwardly above said tire as it is rotated in a horizontal plane with said axis extending generally parallel to an adjacent portion of the sidewall of said tire and said tubular housing extending at an angle approximately 25° from the vertical in position to move about said axis in a plane generally perpendicular to said adjacent portion of

said sidewall whereby said ball carried by said tubular housing is moved in a plane generally parallel to the direction of rotation of said adjacent portion of said tire, and

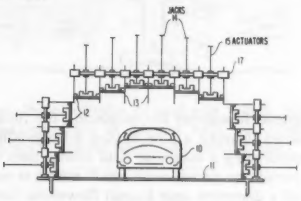
(f) actuator means operatively connected to said shaft for moving said tubular housing toward said tire in response to said sensor means sensing said radial first harmonic high point on said tire being rotated with movement of said actuator means being synchronized with movement of said tire so that said radial first harmonic high point on said tire corresponds with the point of contact of said ball with said tire.

4,308,748

ADAPTIVE AUTOMATIC WALL WIND TUNNEL

James L. Jacocks, Tullahoma, Tenn., assignor to Aro, Inc., Tullahoma, Tenn.

Filed Nov. 30, 1979, Ser. No. 99,157
Int. Cl.³ G01M *9/00*
U.S. Cl. 73—147 **9 Claims**



1. A wind tunnel test section for achieving substantially interference-free velocity distributions in the planes of the walls and ceiling thereof when a test object is situated therein comprising

a support structure external to said test section,

a ground plane supporting said object,

flexible longitudinal slats coacting with baffle means to define said walls and ceiling such that said walls and ceilings are substantially solid, each said slat adjustably mounted on said support structure by a plurality of jack means along the length of said slat for adjusting the position of said slat relative to said support structure, and

transducer means mounted at a plurality of locations along said slats for sensing fluid flow conditions at said transducer means,

whereby said jack means may be actuated to adjust the position of said slats to achieve said substantially interference-free velocity distribution in response to conditions sensed by said transducer means.

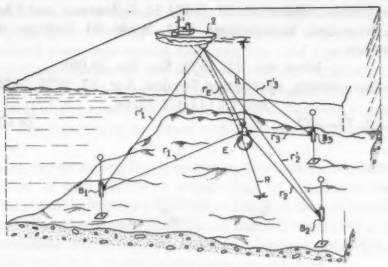
4,308,749

DEVICE FOR MEASURING IN REAL TIME SEA CURRENTS IN DEEP WATER

Noel Clavelloux, and Francois Peynaud, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 20, 1980, Ser. No. 151,588
Claims priority, application France, May 23, 1979, 79 13192
Int. Cl.³ G01D *21/00*
U.S. Cl. 73—170 A **9 Claims**

1. A device for measuring in real time sea currents, or current meter, comprising a plunger dropped from a boat and descending to the bottom of the sea, drifting with the currents, wherein N acoustic responding buoys $B_1, B_2, \ldots B_i, \ldots B_N$ with $N \geq 3$ are lowered to the bottom of the sea and positioned geographically, the boat comprises means for transmitting acoustic pulses at frequency f under the control of a clock H_1, the plunger comprises means for receiving these pulses at frequency f as well as means for transmitting a practically instantaneous response at frequency f_E and a response delayed by time T at frequency f, buoys $B_1, B_2, \ldots B_i, \ldots B_N$ responding to the pulses at frequency f by pulses at frequencies $f_1, f_2, \ldots f_i, \ldots f_N$, all these frequencies being different, the boat comprising means for receiving at frequencies $f_E, f_1, f_2, \ldots f_i, \ldots f_N$ and a computer for calculating from the time of reception of the different pulses, the coordinates of the plunger in



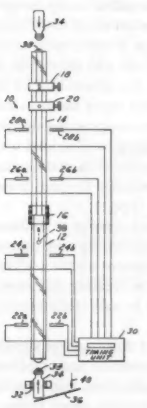
relation to a system of coordinates tied to the responding buoys and wherein said computer determines the currents as a function of the depth.

4,308,750

METHOD AND APPARATUS FOR DETERMINING DIAMETER AND WALL THICKNESS OF MINUTE HOLLOW SPHERICAL SHELLS

David A. Steinman, Ann Arbor, Mich., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 30, 1980, Ser. No. 154,638
Int. Cl.³ G01N *15/02, 21/85*
U.S. Cl. 73—432 PS **12 Claims**



1. A method of measuring dimensional characteristics of minute elements comprising the steps of:

(a) providing first and second fluid-filled paths having differing cross-sectional dimension,

(b) directing each said element successively through said paths such that said elements travel at terminal velocity through at least a portion of each said path,

(c) measuring said terminal velocities of each said element in each said path, and

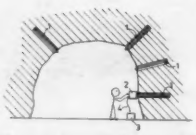
(d) determining a dimensional characteristic of each said element as a predetermined function of the ratio of said terminal velocities.

4,308,751

METHOD FOR INVESTIGATING AN ANCHORED ROD-LIKE BODY HAVING AN ACCESSIBLE END, AND APPARATUS FOR CARRYING OUT THE METHOD

Heinz F. Thurner, Bunsövägen 29, S-132 00 Saltsjö-Boo; Ake J. Sandström, Flisbacken 37, S-191 51 Sollentuna, and Christer N. Svensson, Sunnanvägen 9-11, S-146 00 Tullinge, all of Sweden

Filed Apr. 11, 1979, Ser. No. 29,005
Claims priority, application Sweden, Apr. 13, 1978, 7804161
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—627 18 Claims



18. A method for investigating a rod-like body which is anchored in a surrounding material and which has an accessible end, for selectively determining the state of the anchorage of said body and its anchored length by the excitation of transient elastic oscillations in said accessible end of said body and by the detection at said accessible end of transient elastic oscillations reflected at discontinuities of said body and/or said anchorage, said method comprising,

applying at certain times to different areas of said accessible end excitation in the form of transient oscillatory deformations with phase and amplitude relationships selected so as to promote the generation of oscillations of a predetermined flexural wave mode in said accessible end while at the same time suppressing the generation of oscillations of a predetermined longitudinal wave mode in said accessible end, thereby to cause said excited transient elastic oscillations to be mainly flexural waves of said predetermined wave mode type,

at said detection sensing at different areas of said accessible end deformations in said accessible end caused by said reflected transient elastic oscillations,

at said detection creating deformation signals corresponding respectively to said deformations sensed at said different areas,

combining said deformation signals into output signals indicating time-position and amplitude of said sensed reflected transient oscillations, said combining at times corresponding to said certain times being done in a predetermined way enhancing the effect upon said output signals caused by sensed reflected transient elastic oscillations of said predetermined flexural wave mode type while at the same time suppressing the influence upon said output signals caused by sensed reflected transient elastic oscillations of said predetermined longitudinal wave mode type,

estimating the position and/or magnitude and/or type of said discontinuities with the aid of the time-position and amplitude of said detected reflected transient elastic oscillations indicated by said output signals, and

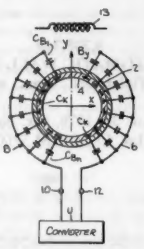
selectively determining one or both of said state of said anchorage and said anchored length of said body with the aid of said estimated discontinuities.

4,308,752

MAGNETIC FLOWMETER

Eggert Appel, Dransfeld, and Peter Nissen, Rosdorf, both of Fed. Rep. of Germany, assignors to Fischer & Porter Co., Warminster, Pa.

Filed Feb. 20, 1980, Ser. No. 123,016
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1978, 2816796
Int. Cl.³ G01F *1/58*
U.S. Cl. 73—861.12 4 Claims



1. A magnetic flowmeter for measuring the flow rate of a fluid conducted through a pipe having a longitudinal axis Z, the fluid intercepting a magnetic field whose lines of flux are essentially parallel to a transverse axis Y which is normal both to axis Z and a diametric axis X, said flowmeter further comprising:

A. a pair of electrode assemblies mounted on the pipe on opposite sides of the Y axis in the region of the magnetic field; and

B. a converter whose input terminals are connected to the electrode assemblies to produce a signal which is substantially proportional to flow rate and is substantially immune to the influence of a non-axisymmetric flow profile, said electrode assemblies being out of contact with the fluid and being capacitively coupled thereto to detect a potential Φ present on the fluid surface, the effective coupling capacitance of the assemblies decreasing in a manner substantially proportional to the cosine of angle ϕ from the X axis.

4,308,753

LOW-POWER ELECTROMAGNETIC FLOWMETER

Jack R. Olson, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 3, 1979, Ser. No. 99,380
Int. Cl.³ G01P *5/08*
U.S. Cl. 73—861.17 13 Claims

1. Flowmeter apparatus comprising:

a selected number of electrodes for contacting a moving body of conductive fluid, two of said electrodes, comprising an electrode pair, being spaced a selected distance from one another;

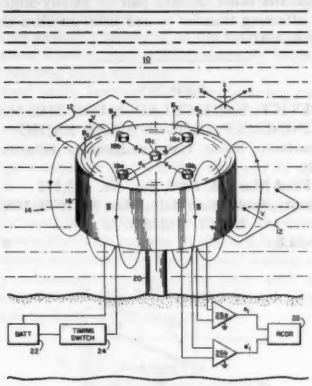
permanent magnet means for generating a magnetic field having a component in orthogonal relationship with a line passing between the electrodes of said pair;

electromagnetic means for selectively varying said orthogonal magnetic field component;

operating means coupled to said electromagnetic means for activating said electromagnetic means during each period in a series of first time periods to establish said magnetic field component at a first level, and for deactivating said electromagnetic means during each period in a series of second time periods to establish said magnetic field component at a second level, the ratio of one of said first time periods to one of said second time periods being less than one; and

means coupled to the electrodes of said pair for generating

first signals during said first time periods and second signals during said second time periods, said first and second signals enabling determination of the potential difference



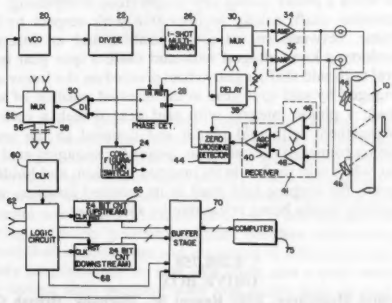
between the electrodes of said pair which occurs when said electrodes are in contact with said fluid and said orthogonal magnetic field component is null.

4,308,754

ULTRASONIC FLOWMETER

Norman E. Pedersen, Newburyport; James E. Bradshaw, Tyngsboro; James E. Matson, Brookline, and Lawrence C. Lynnworth, Waltham, all of Mass., assignors to Panametrics, Inc., Waltham, Mass.

Filed Oct. 19, 1979, Ser. No. 86,402
Int. Cl.[3] G01F *1/66*
U.S. Cl. 73—861.28 **8 Claims**



1. An ultrasonic flowmeter for determining the velocity of flow of a fluid within a conduit comprising;

a first transducer mounted on said conduit for transmitting ultrasonic waves into said fluid in response to applied electrical signals and for producing output electrical signals in response to ultrasonic waves received from said fluid,

a second transducer mounted on said conduit at a location displaced from said first transducer in a direction parallel to the flow of fluid within said conduit, said second transducer transmitting ultrasonic waves into said fluid in response to applied electrical signals and producing output electrical signals in response to ultrasonic waves received from said fluid,

a signal generating circuit coupled to said first and second transducers for applying electrical signals thereto, said signal generator circuit including a controlled frequency oscillator, the output of which controls the output repetition cycle of signals applied to said first and second transducer to initiate transmission of ultrasonic waves,

a signal sensing circuit coupled between each of said transducers and a control input for said controlled frequency oscillator, said signal sensing circuit receiving electrical signals generated by said transducers in response to received ultrasonic waves and coupling said signals to said oscillator to control the frequency of said oscillator such that the output cycle period of said oscillator is proportional to the time required for an ultrasonic wave emitted by one transducer to travel to the other of said transducers,

timing circuit means for determining the time for at least one cycle of said oscillator responding to ultrasonic waves transmitted through said fluid in the direction of said flow and for determining the time of at least one cycle of said oscillator responding to ultrasonic waves transmitted into said fluid in a direction opposite to said flow,

said timing circuit means including a source of timing pulses operating at a frequency at least one order of magnitude higher than the frequency of said controlled frequency oscillator, said timing circuit means determining the number of said timing circuit pulses produced during said at least one cycle of operation of said controlled frequency oscillator, as a means of measuring the time of said cycle, and

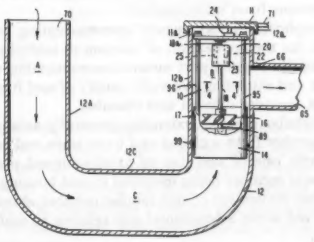
computer means for determining the difference between the said measured time for a said cycle while said ultrasonic waves are being transmitted in the direction of flow and the time required for said cycle when the ultrasonic waves are being transmitted opposite to the direction of flow, said difference being indicative of the flow velocity of said fluid.

4,308,755

LIQUID VOLUMETRIC FLOWMETER

Robert J. Millar, 2 Briarroot Dr., Smithtown, N.Y. 11787; Charles E. Stapleton, 82 Skyline Dr., Coram, N.Y. 11727, and John M. Hauf, 7 Regal Ct., St. James, N.Y. 11780

Filed Jun. 25, 1979, Ser. No. 51,981
Int. Cl.[3] G01F *1/115*
U.S. Cl. 73—861.77 **14 Claims**



1. A liquid flow measuring apparatus comprising:

means to mount said apparatus as an integral unit in the vertically upwardly discharge leg of a U-shaped conduit;

a shaft, being rotatably mounted on said mounting means;

means disposed at one end of the shaft to permit rotation thereof;

a vane mounted to the other end of said shaft, wherein means are mounted adjacent the other end of said shaft to straighten the liquid flow;

magnetic means comprising a magnet mounted adjacent said shaft, wherein the magnet is cylindrical and wherein the magnet cylindrical axis is mounted parallel to the axis of the shaft at a distance adjacent the shaft; and

a reed switch spacedly disposed from said magnet and opera-

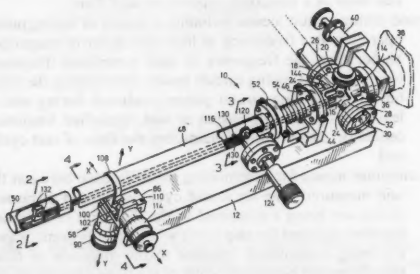
tively associated therewith, whereby each rotation of the shaft passes the cylindrical axis of the magnet in revolution within the transverse plane of the reed switch allowing the reed switch to be in the magnetic field for a substantial part of each shaft rotation by the liquid flow imparting rotation to said vane and shaft.

4,308,756

VACUUM SAMPLE INTRODUCTION UNIT

James E. Robinson, Burlington; Aniket Pant, Toronto, and Roger C. Legg, Burlington, all of Canada, assignors to Ultra High Vacuum Instruments Ltd., Burlington, Canada

Filed Jun. 23, 1980, Ser. No. 162,580
Claims priority, application United Kingdom, Oct. 4, 1979, 34438/79
Int. Cl.[3] G01N *1/00*
U.S. Cl. 73—863.85 9 Claims



1. A sample loading apparatus for loading samples into and unloading samples from an ultra high vacuum environment while maintaining the ultra high vacuum environment during such action, which comprises:

an elongate rigid frame member,

a housing member rigidly mounted on said frame member and having a hollow chamber defined therein,

selectively openable and normally closed sample introduction post means communicating with said chamber for the introduction of sample carrier means to and removal of sample carrier means from said chamber,

vaccum application port means communicating with said chamber for the application of vacuum to said chamber,

a pair of axially-aligned port means communicating with said chamber and extending generally axially of said frame member from opposite sides of said chamber,

a hollow tubular member extending generally axially of said frame member from a closed end to an open end communicating with one of said pair of axially-aligned port means said tubular member being mounted to said housing member for pivotal movement of said tubular member about a vertical axis and about a horizontal axis relative to said housing member,

means for effecting said pivotal movement of said tubular member about said horizontal axis,

means for effecting said pivotal movement of said tubular member about said vertical axis,

rack means slidably mounted in said tubular member and fixed location pinion means in said tubular member in operable engagement with said rack means for effecting longitudinal movement thereof,

actuation means located externally of said housing member for rotating said pinion means to effect said longitudinal movement of said rack means, and

sample transfer means located at one end of said rack means for receiving and supporting said sample carrier means,

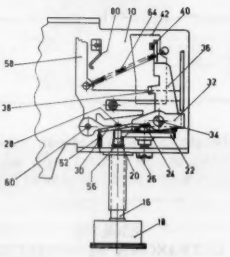
said rack means being positioned to be movable between a first position wherein said rack means extends into said chamber through said one of said pair of axially-aligned port means to locate said sample transfer means in a position accessible to said sample introduction port means and a second position wherein said rack means extends through the chamber and out through the other of said pair of axially-aligned port means for effecting transfer to and from an ultra high vacuum environment.

4,308,757

CLUTCH DEVICE, PARTICULARLY FOR THE MANUAL TUNING CONTROL IN A CAR RADIO

Ezio F. Dellantonio, Rome, Italy, assignor to Autovox S.p.A., Rome, Italy

Filed Mar. 24, 1980, Ser. No. 133,175
Claims priority, application Italy, Mar. 30, 1979, 48564 A/79
Int. Cl.[3] H03J *5/12*
U.S. Cl. 74—10.8 8 Claims



1. A clutch device, particularly for the manual tuning control in a car radio provided with a key operated tuning memory system, in which a tie bar has the function of keeping any preset keys, pressed to tune in on a station, in its operative position, and in which a control slider for disengaging the knob tuning device has the function of disengaging the knob tuning device when a preset tuning key is operating, comprising:

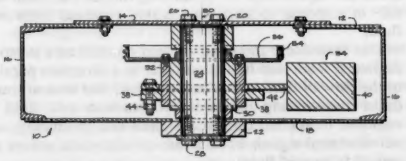
a rotatable shaft, axially reciprocable with respect to the frame, between an extracted position and an inserted position; a knob integral with said shaft; a spur gear integral with said shaft; a gear wheel pivoted on the frame and engaged by said spur gear in the inserted position of said shaft; a pinion integral with said gear wheel; a rack in engagement with said pinion and coupled to the usual tuning runner of the car radio; means for engaging said tie bar when said shaft is in its inserted position; and holding means for keeping said shaft in its inserted position, said holding means being releasable by said slider.

4,308,758

DRIVE BOX

C. Thomas Humphrey, 5589 Regent St., Burnaby, British Columbia, V5B 4R6, Canada

Filed Mar. 24, 1980, Ser. No. 133,307
Claims priority, application Canada, Mar. 28, 1979, 324331
Int. Cl.[3] F16H *33/00, 33/10*
U.S. Cl. 74—87 1 Claim



1. A drive unit for a vibrating machine such as a shaker or the like comprising

a box structure having top, bottom and side walls;
said top and bottom walls having aligned hub members mounted securely thereto;
a dead shaft of substantial diameter secured to and supported by said hub members;
a bearing assembly mounted on the exterior of said shaft for rotation thereon, said bearing assembly including a housing secured to its exterior;
said dead shaft, bearing and housing being concentrically arranged with respect to one another;
one end surface of said housing having a driven pulley concentrically mounted thereto;
a flange secured to said housing adjacent its other end surface;
and a rotor assembly detachably mounted to said flange; said rotor assembly including a weight thereon positioned eccentrically with respect to the bearing and dead shaft whereby rotation of the housing and bearing effects vibratory movement to the drive unit; and drive means mounted on the exterior of the box for rotating said driven pulley by belts or the like.

4,308,759

WORM GEAR MOUNT

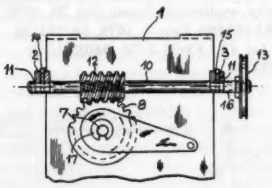
Reinhard Sobotta, Braunschweig, Fed. Rep. of Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Fed. Rep. of Germany

Filed Aug. 30, 1977, Ser. No. 829,156

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1976, 7628190[U]

Int. Cl.³ F16H *35/00*; F16C *35/00*

U.S. Cl. 74—384 **9 Claims**



1. A worm gear assembly comprising bearing support means, two bearings supported by said support means in axially spaced relation to each other, each of said bearings having a shaft-receiving recess of substantially U-shaped configuration open at one side, the open sides of both bearings being faced in the same direction, a first shaft mounted in said recesses of said bearings, a worm gear on said shaft between said bearings, a second shaft spaced from and extending in a direction approximately perpendicular to said first shaft, and a gear wheel on said second shaft meshing with said worm gear on said first shaft, said gear wheel making contact with a side of said worm gear most remote from the bottoms of said U-shaped configurations of said bearings so that contact of said gear wheel against said worm gear prevents said first shaft from moving out of the open sides of said bearings.

4,308,760

HEAVY LOAD CAPABILITY GEAR WHEEL

Otto Voigtländer, Remscheid, and Walter Mages, Radevormwald, both of Fed. Rep. of Germany, assignors to Thyssen Industrie AG, Fed. Rep. of Germany

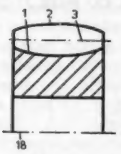
Filed Mar. 17, 1980, Ser. No. 131,050

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1979, 2910981

Int. Cl.³ F16H *55/17*

U.S. Cl. 74—459.5 **11 Claims**

1. A gear with heavy load capacity having a tooth root between two adjacent gear teeth and a contact pattern on each gear tooth comprising, each tooth root forming a concave fillet running substantially in the direction of a rolling element generator line tangent, a tooth top of each tooth having a form



which is equidistant from a tooth root of a mating gear, the fillet form of the tooth root between two adjacent gear teeth being equidistant from the contact pattern of the two adjacent gear teeth.

4,308,761

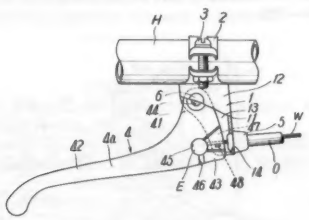
OPERATING LEVER APPARATUS FOR BICYCLE

Keizo Shimano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Apr. 24, 1980, Ser. No. 143,359

Int. Cl.³ B62K *23/06*; G05G *1/04*

U.S. Cl. 74—489 **3 Claims**

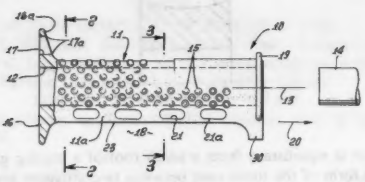


1. An operating lever apparatus for a bicycle, which operates a wire for a control cable comprising an operating wire with an end member connected thereto and an outer cylinder with a receiver for guiding the wire for controlling a mechanism in a bicycle, comprising a bracket and an operating lever supported on the bracket, said bracket having a front wall and a pair of side walls, said front wall having an engaging hole drilled therein to support the receiver of said outer cylinder, said operating lever being L-shaped and being provided with a boss portion and a grip portion, the angular portion of the operating lever having a bottom and front face, said angular portion being provided with a support hole, an introducing groove and an inserting groove, and a projection for catching said wire being provided, on the inner face on said inserting groove, on the under side of the moving route for the wire extending through the inserting groove, said support hole being adapted to receive the end member of said wire, said introducing groove for the wire being connected with said support hole and being open to the bottom face in said angular portion, said inserting groove for the wire being connected with the support hole and the introducing groove and being open to the bottom face and front face of said angular portion.

4,308,762
LIGHTENED HAND GRIP

James H. Jannard, Laguna Niguel, Calif., assignor to Oakley, Inc., Laguna Hills, Calif.

Filed Apr. 14, 1980, Ser. No. 140,099
Int. Cl.³ B62K 21/26
U.S. Cl. 74—551.9 4 Claims

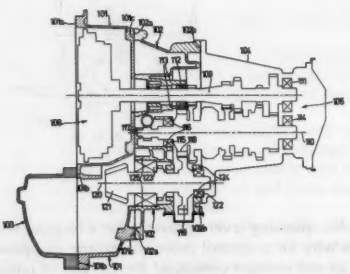


1. In an elastomeric hand grip, the improvement comprising
(a) an elongated grip body having a bore defining an axis, the body adapted to be hand gripped, and
(b) a series of relatively small openings sunk in the body from its outersurface and toward the body interior, said openings distributed over the body to form a recessed tread,
(c) said openings being ring shaped, there being stems about which the ring shaped openings extend.

4,308,763
AUTOMOTIVE VEHICLE DRIVE TRAIN

Roger Brisabois, Clamart, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Continuation-in-part of Ser. No. 873,575, Jan. 30, 1978. This application Sep. 5, 1978, Ser. No. 939,316
Claims priority, application France, Sep. 14, 1977, 77 27810; Sep. 14, 1977, 77 27811
Int. Cl.³ F16H 37/08, 57/02
U.S. Cl. 74—700 5 Claims

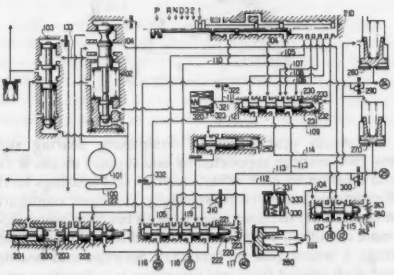


1. A housing assembly for an automotive transmission unit comprising,
a first housing, a second intermediate housing and a third housing,
said first housing having at one end a first substantially planar attachment face with first and second portions and at its opposite end a second substantially planar attachment face which is substantially parallel to the first face, said first portion being adapted for connection to an engine housing and second portion being adapted for connection to a cover for a differential unit,
said first housing including a partition wall which divides it into substantially isolated first and second spaces, said first space being adapted for receiving a power transmitting means and said second space receiving a bevel pinion for transmitting torque to a differential unit,
said second intermediate housing having substantially parallel first and second planar attachment faces located at its opposite ends, said first face of said second housing being connected to the second face of the first housing,
and means for supporting portions of different shafts of said transmission unit on said intermediate housing,
said means comprising:
first bearing support portions located on said second housing at a position adapted for receiving interchangeably a primary shaft of a manual shift gearbox and an output shaft of an automatic gearbox,
second bearing support portions located on said second housing at a position adapted for receiving interchangeably a secondary shaft of a manual shift gearbox and an intermediate shaft driven by an automatic gearbox, third support portion made as an integral part of said second housing for receiving one end of said last named shaft,
fourth and fifth bearing support portions on said second housing at said respective first and second planar attachment faces for supporting a shaft having said bevel pinion of a differential unit;
said third housing being connected to said second face of the second intermediate housing and being adapted to receive a said gearbox and including means axially aligned with said first bearing support portions for further supporting a shaft which is received by the first bearing support portions.

4,308,764
SHIFT CONTROL DEVICE FOR AUTOMATIC TRANSMISSION

Mutsumi Kawamoto, and Nobuaki Miki, both of Nagoya, Japan, assignors to Aisin Warner, K.K., Anjo, Japan

Filed Oct. 24, 1979, Ser. No. 87,653
Claims priority, application Japan, Oct. 30, 1978, 53/133941; Dec. 7, 1978, 53-152180; Dec. 7, 1978, 53/152181
Int. Cl.³ F16H 3/74; B60K 41/06
U.S. Cl. 74—752 A 8 Claims



1. A shift control device for an automatic transmission having shiftable gears, comprising:
(a) an electric control circuit comprising signal generating means for generating an electric signal in accordance with the vehicle running conditions and a logic circuit for receiving said electric signal and generating an electric output signal corresponding to one of the gears;
(b) a first solenoid to supply and discharge fluid pressure in fluid passages, said first solenoid acting in response to said electric output signal;
(c) a first shift valve operable between upshift and downshift positions, the position of said first valve controlled by said first solenoid;
(d) a second solenoid to supply and discharge fluid pressure in fluid passages, said second solenoid acting in response to said electric output signal; and
(e) second and third shift valves operable between upshift and downshift positions, the positions of said second and

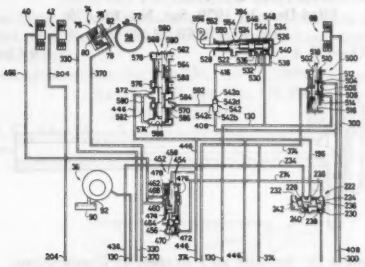
third shift valves controlled by said second solenoid and by the position of said first shift valve.

4,308,765

LINE PRESSURE CONTROL DEVICE FOR THE HYDRAULIC CONTROL SYSTEM OF AN AUTOMATIC POWER TRANSMISSION

Kazuyoshi Iwanaga, Yokohama; Kazuhiko Sugano, Tokyo, and Kunio Ohtsuka, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jan. 26, 1979, Ser. No. 6,811
Claims priority, application Japan, Oct. 3, 1978, 53-121847
Int. Cl.[3] B60K *41/10, 41/06*
U.S. Cl. 74—869 **8 Claims**



1. In an automatic power transmission having a transmission mechanism including a plurality of fluid operated frictional units to be selectively actuated to produce a plurality of gear ratios and having at least one forward drive gear condition and a hydraulic control system including a throttle pressure generating means for producing a throttle pressure representative of load on the engine, a line pressure generating means for producing a line pressure responsive to and higher than the throttle pressure, and valved circuit means for distributing the line pressure selectively to the frictional units and including a first passageway which is pressurized with the line pressure when a manual drive is selected and a second passageway communicating with the line pressure generating means for enabling the line pressure generating means to vary the line pressure with the fluid pressure in the second passageway,

a line pressure control device for incorporation into the hydraulic control system, comprising:

a switching valve operatively intervening between the throttle pressure generating means and the first passageway for passing therethrough the fluid pressure when subjected to one fluid pressure and for passing therethrough the higher one of the fluid pressures when subjected to two different fluid pressures; and

a pressure modifier valve operatively intervening between said switching valve and the second passageway and operative to pass from the switching valve to the second passageway therethrough a fluid pressure which is lower than a predetermined value when the fluid pressure passed through the switching valve is lower than the predetermined value and which is maintained at said predetermined value when the fluid pressure passed through the switching valve is higher than the value.

4,308,766

LIQUID TIRE SEALANT INJECTION TOOL

James E. Myers, Jr., 11117 Thelma Ave., Sun Valley, Calif. 91352

Filed Mar. 31, 1980, Ser. No. 134,998
Int. Cl.[3] B60C *25/16*
U.S. Cl. 81—15.6 **6 Claims**

1. A liquid tire sealant injection and/or tire balancing tool primarily used with pneumatic tube or tubeless tires having a threaded valve stem port provided with a removable threaded Schrader type valve core, comprising: a body member having a vented elongated chamber having an opening at one end for sealed communication with said threaded valve stem port and having a vented chamber wall opposite said opening, said body member having a laterally extending port for communication with an injection line, and an operating shaft extending through and guided by said vented chamber wall opposite said opening, said operating shaft having a Schrader type valve core grappling means including a bifurcated end located within said chamber at its inner end, a movable chamber sealing means taking the form of an "O" ring to center and support said operating shaft, and a control means located outside of said chamber, said grappling means being rotatably and axially

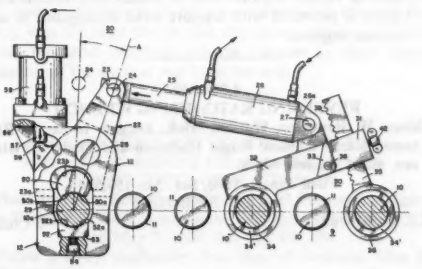
shiftable within said chamber in response to said control means and having said bifurcated end thereof received over said Schrader type valve core to frictionally retain said core to effect unthreading of said valve core on rotation, and withdrawal of said valve core in response to axial motion of said control means to a position within said chamber between said laterally extending port and said vented chamber wall opposite said opening where it does not restrict the flow passage between said ports during the injection of liquid tire sealant and/or balancing fluid, said grappling means being also shiftable within said chamber in response to said control means to rethread and tighten said valve core within said threaded port after an injection operation has been completed.

4,308,767

STUD WRENCH

Claude H. Wilmeth, Montgomery, Tex., assignor to N-S-W Corporation, Austin, Tex.

Continuation of Ser. No. 72,270, Sep. 4, 1979, abandoned. This application Nov. 14, 1980, Ser. No. 206,909
Int. Cl.[3] B25B *13/46*
U.S. Cl. 81—57.39 **15 Claims**



1. In a tool wrench for wrenching a shaft, the combination comprising:

a housing having an axial recess therein;

a pawl having a yoke at one end, said pawl being connected to said housing for rotation about a pawl pivot;

a first clamping jaw in said recess for clamping a portion of said shaft;

a second clamping jaw in said recess for clamping a diametrically-opposed portion of said shaft;

a wrenching actuator having a pivot connected to the pawl

yoke for rotating said pawl in one direction thereby to open said jaws;

a clamping actuator mounted on said housing for turning said pawl in an opposite direction thereby to close said jaws, whereby said pawl, said housing, and said jaws become locked for simultaneous forced rotation with said shaft; and

said wrenching actuator torquing said pawl in said opposite direction, while said clamping actuator produces its clamping action, thereby to simultaneously rotate said jaws, said housing, and said shaft.

4,308,768

RATCHET LEVER

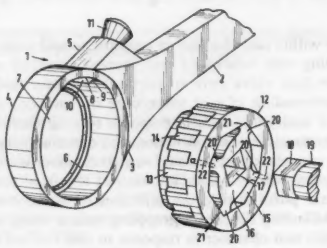
Rudolf Wagner, Stuttgart, Fed. Rep. of Germany, assignor to Rems-Werk Christian Föll und Söhne GmbH & Co., Waiblingen, Fed. Rep. of Germany

Filed May 9, 1980, Ser. No. 148,536

Claims priority, application Fed. Rep. of Germany, May 10, 1979, 2918825

Int. Cl.³ B25B *13/46*

U.S. Cl. 81—60 **9 Claims**



1. A ratchet lever which comprises:

an actuating arm;

a ratchet head arranged on said actuating arm, said ratchet head being provided with a head ring;

a locking ring interchangeably receivable by said head ring; and

an intermediate piece arrangeable in said locking ring, said intermediate piece being provided with at least one four-sided hole for insertion connection with a working tool,

said locking ring being provided with a multiple-sided hole having corner regions, and in which said intermediate piece is provided with support webs arrangeable in said corner regions.

4,308,769

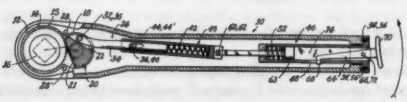
REVERSING RATCHETING WRENCH

Alfonso W. Rantanen, Watton, Mich., assignor to Bertha Rantanen; Karen Hansen; Roger Rantanen and Cindy Christensen, all of Watton, Mich.

Filed Jun. 2, 1980, Ser. No. 155,524

Int. Cl.³ B25B *13/46*

U.S. Cl. 81—63 **3 Claims**



1. A reversing ratcheting wrench comprising:

a wrench body having a handle portion at one end and a socket receiving portion at the other end;

a ratchet gear rotatably mounted in said socket receiving portion;

a pawl pivotally mounted in said body for oscillatory movement relative to said ratchet gear;

a first spring means pivotally connected to said pawl for forcing the pawl into engagement with the ratchet gear;

a push rod pivotally connected to said first spring means;

a second spring means operatively connected to said push rod forcing said rod outward toward the end of said handle portion;

a reciprocating operating piece operatively connected to said push rod for selective engagement of said pawl.

4,308,770

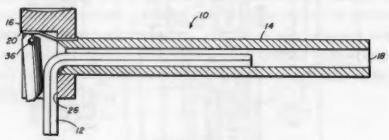
ALLEN WRENCH HANDLE

Paul M. MacDonald, Scituate, Mass., assignor to P.X. Industries, Inc., West Hanover, Mass.

Filed Dec. 26, 1979, Ser. No. 106,479

Int. Cl.³ B25B *13/00*

U.S. Cl. 81—177 A **9 Claims**



1. A handle for use with an L-shaped tool, comprising

(a) a tubular shank portion formed with an axial passage of a length and width sufficient to accommodate the long leg of said tool,

(b) a head disposed at one end of said shank portion and formed with a socket therein open to said passage, to one end of said head and to one side directly opposite said passage, and,

(c) retaining means extending across said one side of said head to restrain that portion of said tool located in said socket,

(d) said retaining means including a resilient member engageable with said head and extensible into said socket,

(e) said resilient member being an elongated leaf spring secured at one end to said head adjacent said socket and normally extending into said socket to engage that portion of said tool located therein, said spring being movable in and out of said socket and to the sides thereof to permit insertion and removal of tools to and from said handle.

4,308,771

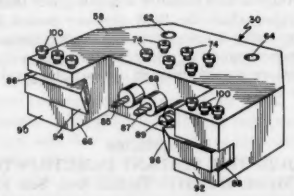
TOOL HOLDER FOR CHUCKER LATHE

William K. Windle, 842 E St., Olivenhaim, Calif. 92024

Filed Mar. 13, 1980, Ser. No. 130,069

Int. Cl.³ B23B *29/26*

U.S. Cl. 82—36 R **3 Claims**



1. A tool holder for use in combination with a chucker lathe which includes a tool turret having a plurality of tool holder stations thereon, said tool holder comprising:

a tool holder block;

means on said tool holder block for attaching said tool holder block to one tool station of said tool turret;

means on said tool holder block for holding a plurality of tools in operative position to perform different machining operations on a common workpiece, and

a plurality of horizontal bores extending entirely through said tool holder block and comprising means for holding cutting tools;

and a plurality of horizontal recesses in said tool holder block for holding cutting tool bits; and

said means for attaching said tool holder block to said tool turret comprising a generally L-shaped recess forming an abutting face for positioning said tool holder block on and engaging said tool turret.

4,308,772

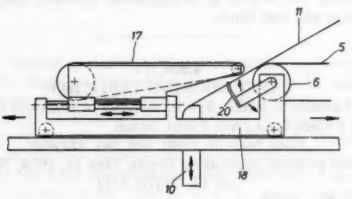
PROCEDURE AND DEVICE FOR CUTTING BRICK BLANKS FROM CLAY COLUMNS

Hans Lingl, Sr., and Hans Lingl, Jr., both of Neu-Ulm-Ludwigsfeld, Fed. Rep. of Germany, assignors to Lingl Corporation, Paris, Tenn.

Continuation of Ser. No. 942,034, Sep. 13, 1978. This application Apr. 9, 1980, Ser. No. 138,598

Int. Cl.³ B26D *7/06*

U.S. Cl. 83—23 **23 Claims**



1. A process for cutting an elongated clay column into plural shorter sections, said process comprising the steps of:

supporting said clay column on a support device provided with an opening extending thereacross,

causing relative movement between the column and the support device so that said opening is moved relative to and beneath the clay column while positioned on the support device, and

simultaneously and synchronously moving a plurality of transversely spaced cutter wires in a single pass through said opening so that said cutter wires engage and pass through the supported column.

4,308,773

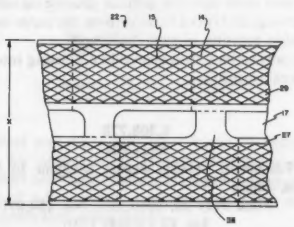
METHOD FOR SHEARING AND SEPARATING BATTERY GRIDS

Jerry T. McDowell, Greeneville, Tenn., assignor to Ball Corporation, Muncie, Ind.

Division of Ser. No. 949,938, Oct. 10, 1978, Pat. No. 4,241,629. This application Mar. 14, 1980, Ser. No. 130,315

Int. Cl.³ B23D *25/12*; B26D *1/56*

U.S. Cl. 83—37 **3 Claims**



1. A method of forming individual battery grid structures from a sheet material having pasted and unpasted portions with a plurality of spaced apart openings therethrough, said method comprising transversely shearing said sheet material from opposite sides along a line from the edge of the sheet material to one of the openings, said cutting transversely being staggered and extending inwardly from the edge to almost the center of the material, and subsequently longitudinally slitting said sheet material from opposite sides between two spaced apart openings whereby the shearing and slitting cooperates to sectionalize the pasted battery grid structure from said sheet material.

4,308,774

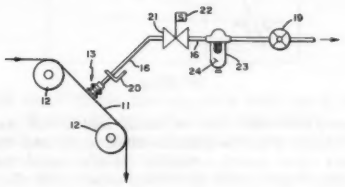
HOLE CUTTING DEVICE FOR WEBS

Gerard M. Bohler, Pine Grove; Edward D. Reed, Friedensburg, and Victor A. Kowalski, Pottsville, all of Pa., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Apr. 1, 1980, Ser. No. 136,205

Int. Cl.³ B26D *7/18*; B29C *17/10*

U.S. Cl. 83—100 **6 Claims**



1. Device for cutting holes in a continuously moving web including:

a. a hollow flexible vacuum tube means terminating in a cutting edge;

b. a suction cup surrounding said vacuum tube;

c. a vacuum source to apply negative pressure to the vacuum tube;

d. timing means and valve means for controlling the supply of vacuum to the tube;

e. a filter cup between the vacuum source and the cutting edge;

whereby the timing means and valve means initially create a vacuum, pulling the web against the suction cup, allowing the web to be pulled against the knife edge, thereby perforating the web, and the vacuum pulls the punched out chip through the tubing into the filter means; and the timing means and valve means, thereafter disconnecting the vacuum to allow disengagement of the suction cup from the web.

4,308,775

ARRANGEMENT FOR CONTROLLING THE ADVANCING DEVICE OF A MACHINE FOR REPETITIVE OPERATIONS

Norbert Schröder, Schopfheim, Fed. Rep. of Germany, assignor to Gerhard Kückels, Schopfheim, Fed. Rep. of Germany

Filed May 5, 1980, Ser. No. 147,258

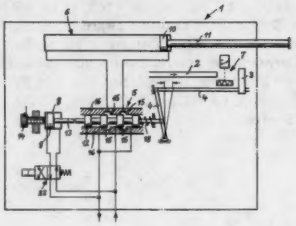
Claims priority, application Fed. Rep. of Germany, May 8, 1979, 2918435

Int. Cl.³ B23D *36/00*

U.S. Cl. 83—289 **11 Claims**

1. In an arrangement for controlling an advancing device of a machine for repetitive operations, especially for controlling movement of a slide carrying a cutting device of a cutting machine for cutting an elongated workpiece such as a profile emanating at a predetermined speed from a profiling machine, an extrusion press, a straightening machine or the like into sections of uniform length, a combination comprising means for moving the slide in the direction of the moving workpiece

and comprising fluid-operated means including a cylinder member and a piston member reciprocatably arranged in said cylinder member and dividing the latter in two compartments, one of said members being stationary and the other fixed to the slide; a circuit for hydraulic pressure fluid; main valve means in said hydraulic pressure fluid circuit for controlling flow of pressure fluid into and out of the respective compartments; an abutment on the slide located in the path of the front end of the advancing workpiece; switch means on the slide upstream of said abutment, as considered in the direction of the moving workpiece, to be actuated as the front end of the workpiece passes said switch means; means in circuit with said switch means and cooperating with said moving means for preac-



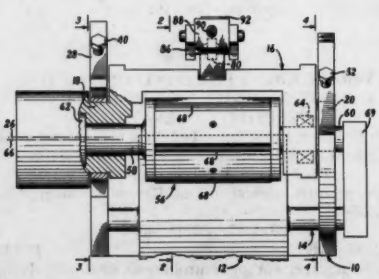
celerating said slide upon actuating said switch means to a speed smaller than the predetermined speed and comprising auxiliary valve means controlled by said switch means and preaccelerating cylinder and piston means controlled by said auxiliary valve means and cooperating with said main valve means for controlling flow of pressure fluid into and out of the compartments to thus preaccelerate the slide to a speed smaller than said predetermined speed; and means operatively connected to said abutment and said main valve means for controlling flow of pressure fluid into and out of the compartments in such a manner that upon an engagement of the front end of the workpiece with said abutment said slide is accelerated to said predetermined speed.

4,308,776

WEB SECTIONING APPARATUS WITH ADJUSTABLE KNIFE ENGAGEMENT

Andrew J. Gillespie, Richmond, and George Dingus, Cartersville, both of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Apr. 23, 1980, Ser. No. 143,812
Int. Cl.³ B23D *25/02*
U.S. Cl. 83—344 **15 Claims**



1. Web sectioning apparatus comprising:

(a) a housing having a pair of coaxial concave bearing surfaces;

(b) a drum rotatably mounted to said housing on an axis parallel to the axis of said bearing surfaces;

(c) a frame having a pair of coaxial journals, each of said journals being received in an associated one of said bearing surfaces so that the axis of said journals is concentric with the axis of said bearing surfaces, said frame being mounted for pivotal movement on said bearing surfaces about the axis of said journals;

(d) a knife assembly rotatably mounted to said frame on an axis of rotation fixed parallel to the axis of said journals but eccentric therefrom, said axis of rotation of the knife assembly being adjustable towards or away from the axis of the drum responsive to pivotal movement of the frame, said knife assembly having a cutting edge extending parallel to its axis of rotation, so that a web carried by said drum may be sectioned by rotating said drum and knife assembly to repetitively engage said cutting edge with said drum;

(e) clamp means for forcing each journal against the associated bearing surface to fix said frame to said housing so that the position of the axis of rotation of the knife assembly relative to the axis of the drum is securely maintained during operation of the apparatus, said clamp means also being operable to release said journals; and

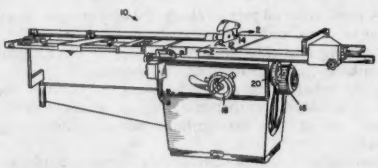
(f) movement means for controllably pivoting said frame on said bearing surfaces when said journals are released to adjust the degree of engagement between said cutting edge and said drum.

4,308,777

PANEL SCORING TABLE SAW

Peter Lawson, S. Paulo, Brazil, assignor to Rockwell do Brasil Ind. e Com. Ltda., Sao Paulo, Brazil

Filed May 21, 1980, Ser. No. 152,080
Claims priority, application Brazil, May 21, 1979, 7903150
Int. Cl.³ B27B *5/24*
U.S. Cl. 83—477.2 **1 Claim**



1. In a tilting arbor saw having a frame, a tilt casting mounted on the frame by trunions, a main cutting blade and a scoring blade, each axially supported on the tilt casting, the improvement comprising means to adjust the lateral position of the scoring blade so that it is aligned with the main blade, said adjusting means including:

(a) a sleeve-like housing having an inner surface and an outer surface with an annular groove formed therein mounted within the tilt casting to receive the axle of the scoring blade;

(b) alignment means which include: (i) a shaft journaled in the frame, (ii) an eccentric extending from the inner end of said shaft into the annular groove on said sleeve-like housing, and (iii) a hand grip on the outer end thereof to enable rotation of said shaft; and

(c) means to lock said sleeve-like housing into the desired lateral position.

4,308,778

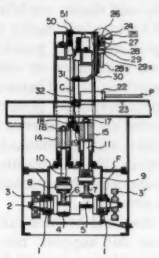
SLICER

Katsushi Takahashi, Asaka, Japan, assignor to Height, Inc., Matsudo, Japan

Filed May 28, 1980, Ser. No. 154,079
Int. Cl.³ B26D *1/50*
U.S. Cl. 83—751 **3 Claims**

1. A slicer for making a plurality of uniform, thin slices in a single operation, comprising: a frame; first and second blade

holders mounted for opposite reciprocal motion in said frame, each of said blade holders having a substantially parallel, spaced upper and lower portion; first and second groups of knife blades; means to mount said first and second groups of knife blades in said first and second blade holders, respectively, said mounting means each comprising a support member fixedly mounted on the lower portion of the corresponding blade holder and hook means for each blade in the group adjustably mounted side by side on the upper portion of the corresponding blade holders, said hook means being shaped to define a groove between each two adjacent hook means, said



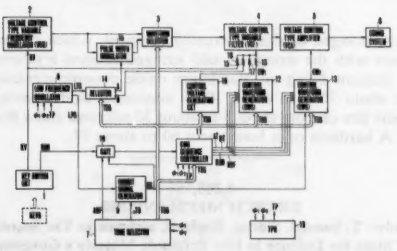
groove having a size to pass a knife blade, said supporting members having a blade passing grooves therein, said blade holders being mounted in said frame with the upper and lower portions of one blade holder higher than the upper and lower portions of the other blade holder and the knife blades of the group on the one blade holder passing through the groove between the hook means on the other blade holder so as to be parallel to and closely spaced from the knife blades on the other blade holder, and the knife blades on the other blade holder passing through the grooves in the supporting member of the one blade holder; and means to reciprocate said blade holders in opposite directions.

4,308,779

CONTROL WAVEFORM GENERATORS FOR ELECTRONIC MUSICAL INSTRUMENTS

Hideo Suzuki; Kenji Itakura, both of Hamamatsu, and Yasuji Uchiyama, Hamakita, all of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 27, 1980, Ser. No. 125,172
Claims priority, application Japan, Feb. 28, 1979, 54-22857
Int. Cl.[3] G10H *1/055, 1/057*
U.S. Cl. 84—1.19 **7 Claims**



1. A control waveform generator for an electronic musical instrument for generating a control waveform adapted to control at least one tonal element in response to the depression and release of a key among a plurality of keys, said control waveform generator comprising:

a pulse generator for generating a pulse signal having a repetitive frequency;

a detector including a counter which starts to count the number of said pulse signals when a key is depressed, said detector generating a first detection signal and a second detection signal, said first detection signal generated during an interval between a time when said key is depressed and a time at which a count of said counter reaches a target value, said second detection signal generated during an interval between a time when the counter counts the target value and a time when said depressed key is released;

a capacitor, a terminal voltage of said capacitor being taken out as said control waveform;

a first circuit responsive to said first detection signal for carrying out one of a charge operation and a discharge operation for said capacitor;

a second circuit responsive to said second detection signal for carrying out the other one of said charge and discharge operations for said capacitor; and

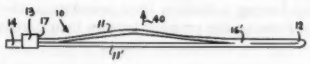
a third circuit for carrying out the other one of said charge and discharge operations for said capacitor when said depressed key is released.

4,308,780

WARP RESTORING DEVICE FOR THE NECK OF A STRINGED MUSICAL INSTRUMENT

Normand Boucher, La Patrie, Canada, assignor to Les Guitares Norman Inc., La Patrie, Canada

Filed Apr. 17, 1980, Ser. No. 140,983
Int. Cl.[3] G10D *3/00*
U.S. Cl. 84—293 **10 Claims**



1. A warp restoring device for use in a neck of a stringed musical instrument, said device comprising a pair of rods held in parallel relationship, connecting means secured at a common end of said rods, threaded means cooperating with said connecting means to cause limited axial displacement of one of said rods, and a rod connection spaced from a far end of said rods to immovably interconnect both said rods in a connection zone to control the position of a bending zone for said rods when said threaded means is rotated in a predetermined direction.

4,308,781

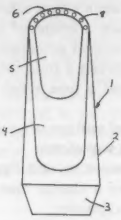
SAXOPHONE MOUTHPIECE HAVING BOUNDARY LAYER CONTROL MEANS

Jay S. McGuerty, 21 E. Lakeshore Dr., Apartment 3, Cincinnati, Ohio 45237

Filed Oct. 31, 1980, Ser. No. 202,685
Int. Cl.[3] G10D *9/02*
U.S. Cl. 84—383 R **10 Claims**

1. In a mouthpiece for woodwind musical instruments of the type comprising a hollow member having a mouth engaging end terminating in a generally arcuate edge and a lower face extending forwardly of said edge configured to mount a reed, the interior of said member defining a tone chamber, and a centrally positioned opening extending through said face and communicating with said tone chamber, the portion of said

face positioned between said opening and said edge defining a tip sealing surface, the improvement in combination therewith



comprising at least one opening extending through said tip sealing surface.

4,308,782

LAMINATED HEAD OF PLASTIC SHEET MATERIAL AND A SYNTHETIC FABRIC MATERIAL HAVING RANDOM FIBER ORIENTATION

Donald R. Hartry, La Canada, Calif., assignor to Remo, Incorporated, North Hollywood, Calif.

Filed Oct. 4, 1979, Ser. No. 81,844

Int. Cl.³ G10D *13/02;* **B32B** *3/02, 5/02, 7/02*

U.S. Cl. 84—414 **22 Claims**

1. A head for a drum or similar musical instrument comprising a synthetic plastic sheet material laminated to a synthetic fabric material having a random fiber orientation, the plastic sheet material forming the primary tension load carrier.

4,308,783

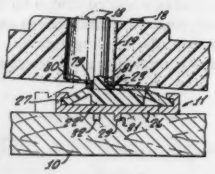
KEYBOARD CONSTRUCTION FOR PIANOS

Horst L. Absmann, Brea, Calif., assignor to CBS Inc., New York, N.Y.

Division of Ser. No. 859,918, Dec. 12, 1977, Pat. No. 4,205,583. This application Mar. 17, 1980, Ser. No. 131,188

Int. Cl.³ G10C *3/12*

U.S. Cl. 84—439 **2 Claims**



1. A high-quality low-cost keyboard for pianos and similar instruments, and which is adapted to produce different touch sensations, said keyboard comprising:

(a) a support,

(b) a balance-rail means,

(c) means to mount said balance-rail means on said support in either of two positions,

said two positions, and the distance between said two positions, being known and predetermined,

one of said positions being substantially forward of the other, and

(d) a multiplicity of key shanks adapted to be quickly mounted on said balance-rail means, at either of two known, predetermined positions, and also to be removed quickly therefrom,

one of said two positions at which said key shanks are mounted on said balance-rail means being substantially forward of the other,

the distance between said two positions at which said key shanks are mounted on said balance-rail means being said same predetermined distance as that between said two positions at which said balance-rail means is mounted on said support,

said balance-rail means and key shanks being so correlated to each other that an adjustment procedure may be effected whereby said shanks are lifted off said balance-rail means, said balance rail means then shifted to the other of said predetermined positions at which said balance-rail means is mounted on said support, and said shanks then remounted on said balance-rail means in the other of said predetermined positions at which said shanks are mounted on said balance rail means,

said balance rail means and key shanks also being so correlated to each other that the positions of said shanks relative to said support will be the same before and after said adjustment procedure,

(e) characterized in that said balance-rail means is not infinitely adjustable on said support, nor is any key shank infinitely adjustable relative to said balance-rail means, there instead being only discrete, known positions of mounting of said balance-rail means on said support, and of said key shanks on said balance-rail means, the distances between said discrete, known positions being so predetermined that touch sensation is adjusted merely by shifting said shanks off and on said balance rail means, and said balance-rail means off and on said support, without ever changing the positions of said shanks relative to said support.

4,308,784

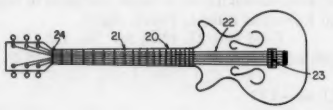
CERAMIC PARTS FOR STRINGED MUSICAL INSTRUMENTS

Thomas S. Eizonas, P.O. Box 895, Etowah, N.C. 28729

Filed May 27, 1980, Ser. No. 153,076

Int. Cl.³ G10D *3/04, 3/06*

U.S. Cl. 84—452 R **10 Claims**



1. A stringed musical instrument element, which comes in contact with the strings of said stringed musical instrument, said element being an aluminium oxide ceramic containing from about 75% to about 100% aluminum oxide, having a particle size of from about 5 to about 30 microns, and a Rockwell A hardness of at least about 60 to about 87.

4,308,785

BREECH MECHANISMS

Glyndwr T. Samuel, Sidcup, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Jan. 16, 1980, Ser. No. 112,494

Claims priority, application United Kingdom, Jan. 31, 1979, 03300/79

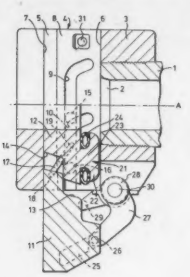
Int. Cl.³ F41F *11/02*

U.S. Cl. 89—4 B **8 Claims**

1. A breech mechanism for a gun barrel having an axial breech aperture, including:

a guideway having an axis disposed transverse to and adjacent the breech aperture,

a breech block slideable in the guideway having a drive portion and an obturator portion interlinked by at least one articulated linkage arm, which two portions are mutually engageable at a stepped interface in two distinct engagements, one being a breech open engagement and the other a breech closed engagement, differing one from the other by a one-step displacement of the interface, and



cam means operative between the obturator portion and the guideway for constraining the obturator portion, when the drive portion is traversed in the guideway, to follow a part-arcuate path aligned at one end with the axis of the guideway and at the other with the axis of the gun barrel, whereby the obturator portion is caused to change from one to the other of the said two engagements with the drive portion.

4,308,786

TRIGGER DEVICE FOR AUTOMATIC GUN

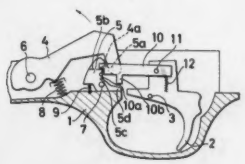
Hisao Hayashi, Tokyo, Japan, assignor to Kabushiki Kaisha Kawaguchiya Hayashi Juho Kayaku-Ten, Tokyo, Japan

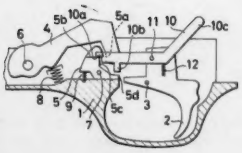
Division of Ser. No. 855,667, Nov. 29, 1977, Pat. No. 4,185,537. This application Sep. 11, 1979, Ser. No. 74,316

Claims priority, application Japan, Dec. 11, 1976, 51-149158; Jun. 28, 1977, 52-76893

Int. Cl.³ F41C *5/02*

U.S. Cl. 89—144 **3 Claims**





1. A trigger device for an automatic gun having a firing direction, comprising a receiver, a trigger guard mounted in said receiver, a trigger pivotally attached to said trigger guard and arranged to be pulled by a shooter for firing the gun, a breech block mounted in said receiver upwardly from and forwardly of said trigger relative to the firing direction, a connector which is elongated in the firing direction and has a forward end portion extending in the firing direction forwardly of said trigger and a rear end portion positioned above said trigger, said forward end portion having a downwardly extending leg portion, said trigger having an upper part adjacent said rear end portion of said connector, said rear end portion being mounted to said upper part of said trigger for pivotal movement about an axis transverse to the firing direction wherein said connector is moved in the firing direction when said trigger is pulled to pivot relative to said trigger guard to move said upper part of said trigger, a sear rotatively attached to said trigger guard forwardly of said trigger in the firing direction, a spring for biasing said sear for rotation in the direction opposite to the firing direction, said sear having an upwardly extending edge facing rearwardly toward said trigger and first and second upwardly directed faces, said first face being located above said second face, said forward end portion of said connector being in juxtaposition to said upwardly extending edge so that said connector pivots said sear against the biasing action of said spring when said trigger is pulled, said sear having a claw part facing opposite to the firing direction, a hammer pivotally attached to said trigger guard forwardly of said sear and extending rearwardly from the pivot point to adjacent said sear, said hammer having a hook part on the end thereof spaced rearwardly from the pivotal connection and arranged to interengage with said claw part of said sear for holding said hammer in position to fire the gun and said hammer being releasable from said sear when said sear is displaced against the biasing action of said spring associated therewith by said connector, a spring loaded within said trigger guard and bearing against said hammer for pivotally displacing said hammer forwardly in the firing direction when the interengagement of said sear and said hammer is released, a spring mounted on said trigger rearwardly in the firing direction from the pivotal connection of said trigger to said trigger guard, said spring mounted on said trigger extending upwardly into contact with said connector and biasing said connector downwardly against said first upwardly directed face on said sear so that a preset gap is provided between the free end of said leg portion and said second upwardly directed face on said sear, said breech block being slidably displaceable through said receiver when the gun is fired so that said breech block returns said hammer from the released position back into the interengaged position with said sear, said second upwardly directed face on said sear being moved through said gap and against the free end of said leg portion to upwardly displace said forward end portion of said connector thereby disengaging said sear so that said forward end portion of said connector is unable to contact said sear for effecting firing of the gun.

4,308,787

PRIORITY FLOW DIVIDER

Donald J. Parquet, and Donald R. King, both of Burlington, Iowa, assignors to J. I. Case Company, Racine, Wis.

Filed Feb. 11, 1980, Ser. No. 120,201

Int. Cl.³ F01B *25/02*

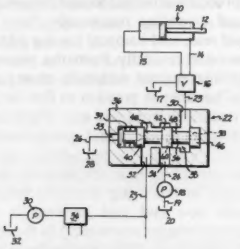
U.S. Cl. 91—6 **1 Claim**

1. In a fluid control system including a steering circuit and an auxiliary circuit, said steering circuit including at least one steering cylinder connected to a steering valve and a first pump means for supplying fluid under pressure to said steering circuit, said auxiliary circuit including a fluid pressure operated load handling mechanism and a second pump means for supplying fluid under pressure to said auxiliary circuit, the improvement comprising:

a priority flow divider for automatically dividing fluid flow between said steering and auxiliary circuits, said flow divider being connected between said first pump means and said steering valve and including an inlet connected to said first pump means, a first discharge conduit connected to said steering valve, and a second discharge conduit connected to said auxiliary circuit;

said flow divider including a housing having a slidable spool valve therein engageable with interior wall portions of said housing, said spool valve having a plurality of enlarged cylindrical portions including an end cylindrical portion and an intermediate cylindrical portion, said enlarged cylindrical portions being connected together by connecting portions of a reduced diameter;

resilient means for shifting said spool valve in a first direction in response to said steering valve being in a neutral on non-actuated position such that said enlarged cylindrical portions of said spool valve engage said interior wall portions to define a fluid connecting chamber between said inlet connected to said first pump means and said second discharge conduit connected to said auxiliary circuit, one of said enlarged cylindrical portions including a pilot bleed orifice for permitting a small pilot fluid flow to be directed to said steering valve whereby all of said fluid flow from said first pump means is being directed to said auxiliary circuit except for said small pilot flow which is directed to said steering valve when said steering valve is in its neutral or non-actuated position; and



said spool valve being shifted in a second direction against said resilient means in response to increased pressure in said first discharge conduit upon actuation of said steering valve such that said enlarged cylindrical portions of said spool valve engage said interior wall portions to define a fluid connecting chamber between said inlet connected to said first pump means and said first discharge conduit connected to said steering valve whereby all of the fluid flow from said first pump means is directed to said steering valve;

said steering valve including an inlet port, an outlet port, a right turn port, a left turn port, and an open center which is connected to a reservoir, said small pilot flow passing through said open center to said reservoir when said steering valve is in its neutral or non-actuated position; and

said spool valve including an interior pilot line and, valve means mounted within said pilot line for providing steering relief.

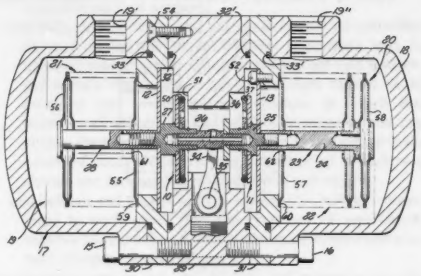
4,308,788

FLUID PRESSURE RESPONSIVE APPARATUS

William J. Cooper, Los Angeles, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 63,179, Aug. 3, 1979, Pat. No. 4,247,078.
This application Apr. 15, 1980, Ser. No. 140,581
Int. Cl.³ F16J *3/04*
U.S. Cl. 92—37 **1 Claim**

1. Fluid pressure responsive apparatus, said apparatus comprising: a mounting ring assembly; first and second bellows each having an open end and a closed end, said open ends being sealed around respective opposite sides of said mounting ring assembly; first and second disc-like planar springs, said first spring being fixed at its periphery to one side of said mounting ring assembly, said second spring being fixed at its periphery to the other side of said mounting ring assembly, each of said springs having a pair of spiral slots of polar symmetry; a first stem having one end fixed to the center of said first spring and another end fixed to the center of said first bellows closed end; a second stem having one end fixed to said second spring and another end fixed to the center of said second bellows closed end, the centers of said first and second springs being fixed relative to each other, said first and second



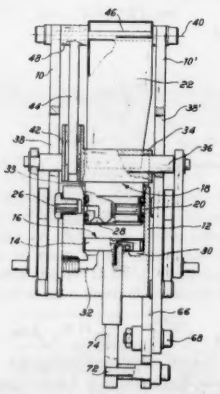
springs biasing both of said first and second bellows against a differential pressure thereacross and guiding the same and said first and second stems and limiting movement of said first and second stems and said bellows approximately to an axial direction; and a housing around each of said bellows to admit fluids of the same or different pressures to the respective exteriors of each of said bellows.

4,308,789

AUTOMATIC COFFEE MACHINES

Taddeo Piloni, and Paolo Valente, both of via Noccoli 30, Cremeno, Como, Italy

Filed Mar. 27, 1980, Ser. No. 134,521
Claims priority, application Spain, Apr. 4, 1979, 479.290
Int. Cl.³ A47J *31/34*
U.S. Cl. 99—289 R **7 Claims**



1. Apparatus for preparing and delivering a coffee infusion comprising a fixed cylinder including a first end and a second end, said fixed cylinder including an upper rim located at said first end thereof, a first piston mounted for reciprocation within said fixed cylinder between a first position within said cylinder and displaced from said upper rim and a second position in alignment with said upper rim, a second piston mounted for movement along a path comprising first and second path portions, said first path portion being located in the plane of

said fixed cylinder and including a first end and a second end. said first end of said first path portion being located within said fixed cylinder and said second end of said first path portion being located outside of said fixed cylinder, said second path portion comprising an arcuate path having a center defined by a horizontal axis and being located in the plane of said fixed cylinder, said second path portion comprising a first end and a second end, said first end of said second path portion coinciding with said second end of said first path portion, and said second end of said second path portion being displaced outside of the plane of said fixed cylinder, means for supplying hot water to said fixed cylinder when said first piston is in said first position and said second piston is located at said first end of said first path portion, collecting means for collecting coffee produced in said fixed cylinder by the passage of said hot water therethrough, control means for controlling the movement of said second piston along said path, funnel means for delivering a predetermined amount of coffee powder to said fixed cylinder, said funnel means having a first end and a second end, and being pivotable between a first position wherein said second end of said funnel means is in alignment with said fixed cylinder whereby said coffee powder may be fed thereinto, and a second position wherein said second end of said funnel means is pivoted out of the plane of said fixed cylinder, said funnel means being pivotable about a point corresponding to said center of said arcuate path at said first end of said funnel means.

4,308,790

BAKING TONGS

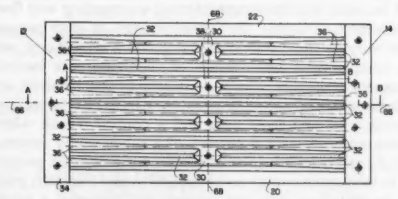
Franz Haas, Sr., Gerstlgasse 25, 1210 Wien; Franz Haas, Jr., Castellezgasse 32, 1020 Wien, and Johann Haas, Wiener Strasse 209-215, 2104 Spillern (Nö), all of Austria

Filed Jan. 14, 1980, Ser. No. 112,132

Claims priority, application Austria, Jan. 15, 1979, 269/79

Int. Cl.³ A47J *37/00*

U.S. Cl. 99—380 **13 Claims**



1. Baking tongs for holding a filling of dough which is baked in a baking oven space at a baking temperature to produce sheets of wafers, the baking tongs comprising:

(a) a pair of baking plates each having a dough treating side, said baking plates cooperating with each other for movement between

a clamped and filled condition in which said baking plates are heated and held together so that said dough treating sides are in generally face-to-face spaced relationship at a certain distance from each other so as to define a space therebetween, the filling of dough to be baked being disposed in said space between said dough treating sides; and

an unclamped condition in which said baking plates have been moved apart for removal of baked wafer sheets and entry of new dough to be baked;

said baking plates also being capable of assuming an unfilled, clamped condition in which said baking plates are generally in the same position as in said clamped and filled condition but are not acted upon by a filling of dough subject to the heat of the baking plates;

(b) each dough treating side being defined by an edge which borders each such dough treating side, each dough treating side having a geometric center within the area bounded by said edge;

(c) the distance between said dough treating sides of said pair of baking plates in said unfilled, clamped condition thereof being smaller at said centers of said baking plates than at at least certain portions of said edges, said distance between dough treating sides increasing in at least one direction from said centers to said edges; and

(d) the distance between said dough treating sides at said centers, when said baking plates are in said clamped and filled condition and when they are at the baking temperature, being equal to or less than the same distance taken at at least certain portions of said edges.

4,308,791

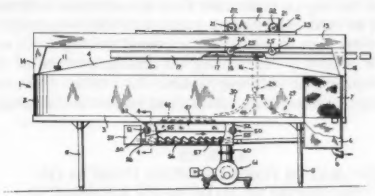
ENCLOSED FINISHING VAT FOR CHEESE MAKING

Gretz L. Hazen, Fort Atkinson, Wis., assignor to Dec International, Inc., Madison, Wis.

Continuation of Ser. No. 20,803, Mar. 15, 1979, abandoned. This application Jun. 13, 1980, Ser. No. 159,235

Int. Cl.³ A01J *25/08, 25/10, 25/11*

U.S. Cl. 99—459 **9 Claims**



1. A finishing vat for cheese making, comprising a vat having a generally flat bottom wall and a side wall and adapted to contain a quantity of cheese curd and whey, an agitator unit mounted to move in a reciprocating path relative to the vat, said agitator unit including a vertical drive shaft and reversible drive means to selectively rotate the shaft in a stirring direction and an opposite unloading direction, an arm secured to the lower end of the shaft and disposed within the vat, a stirring paddle pivotally connected for floating vertical movement to the arm, said stirring paddle having a curd engaging edge facing in said stirring direction and disposed to stir the curd as the shaft is rotated in said stirring direction, a whey discharge outlet in the bottom wall of the vat, a curd discharge outlet in the bottom wall of the vat, and separate from the whey outlet, and an unloading paddle pivotally connected for free vertical movement to the arm, said unloading paddle having a curd engaging unloading edge facing in said unloading direction and disposed to ride along the bottom wall of the vat to deliver the entire quantity of curd in the vat through the curd discharge outlet when the shaft is rotated in the unloading direction, stirring and unloading selectively occurring on reversal of said drive means and without removal of said paddles from said arm.

4,308,792

DRUM PRINTING MACHINES HAVING DRIVE MEANS WITH FREEWHEEL AND CRANK-CONNECTING ROD SYSTEM

Jean-Louis Dubuit, Paris, France, assignor to Machines Dubuit Societe Anonyme, Paris, France

Filed Jun. 22, 1979, Ser. No. 51,126

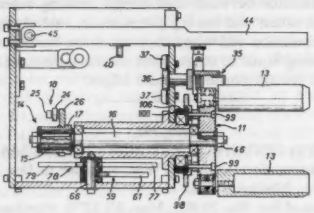
Claims priority, application France, Jun. 26, 1978, 78 19034

Int. Cl.³ B41F *17/22*

U.S. Cl. 101—38 A **14 Claims**

1. In printing machine of the type comprising a drum carried by a rotatable shaft at a printing station and provided with a plurality of article holding mandrels, a feeding mechanism for

selectively feeding and positioning articles to be printed on said mandrels, an ejection mechanism for automatically removing printed articles from said mandrels, drive means for effecting stepwise angular displacement of said drum, actuating means for effecting reciprocating operation of said feeding mechanism, and actuating means for effecting reciprocating operation of said ejection mechanism, both of said actuating



means being controlled in synchronism with said drive means, the improvement comprising said drive means including a freewheel having an inner race fixed for rotation with said drum and an outer race, a crank-connecting rod system attaching said outer race to a rotatably mounted driving shaft, and means for positively determining the angular position of the drum comprising an indexing member fixed to the drum and brake means coacting with means fixed relative to said drum.

4,308,793

APPARATUS FOR STAMPING INDICIA ON WORKPIECES MOVING IN A PATH

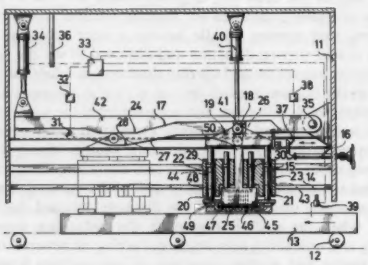
Ulrich Schmidt, Witten-Bommern, Fed. Rep. of Germany, assignor to Estel Hoesch Werke Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Filed Dec. 5, 1979, Ser. No. 100,540

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1978, 2855291

Int. Cl.³ B41F *17/24*

U.S. Cl. 101—44 **13 Claims**



1. An apparatus for stamping indicia on workpieces moving in a path, comprising a rail extending along but spaced from the path of workpiece movement; a stamping unit movable along said rail to and from a rest position adjacent an end portion of the rail and including a housing having a lower part which is movable transversely to said path; cam and follower means for biasing said lower part against a workpiece moving in said path; and an inking box adjacent said end portion of the rail and in tight engagement with said housing when said unit is in said rest position, so as to be protected against ink evaporation and the entry of contaminants; said cam and follower means comprising a cam track also extending along said path and having a portion projecting toward the same, and a follower connected to said lower part and tracking said cam track; means mounting said cam track for displacement towards and away from said path, and displacing means for effecting such displacement of said cam track.

4,308,794

HAMMER ASSEMBLY FOR A SERIAL TYPING DEVICE

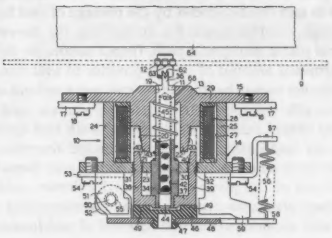
Contardo Adamoli, Str. dei Sospiri 11, 10081 Castellamonte (Turin), and Remo Falconieri, Str. per Cuceglio, 10090 S. Giorgio Canavese (Turin), both of Italy

Filed Jul. 9, 1979, Ser. No. 55,782

Claims priority, application Italy, Jul. 13, 1978, 68657 A/78

Int. Cl.³ B41J *7/92*

U.S. Cl. 101—93.03 **1 Claim**



1. A hammer assembly for a serial typing device comprising a platen, a characters-bearing element having a plurality of characters carried by a corresponding plurality of flexible laminae and means for selectively positioning said laminae in front of said platen in a printing position; said hammer assembly comprising a typing hammer, an electromagnet for actuating said typing hammer in a direction substantially perpendicular to said platen to flex the selected lamina and to strike the corresponding character against said platen, said electromagnet comprising a fixed core, a movable armature directly fixed to said hammer and an energizable coil surrounding said fixed core, means for varying the impact energy of said hammer only by varying the duration of energization of said coil, said means comprising a pole surface of said fixed core inclined with respect to the direction of movement of said hammer, and pole surfaces of said movable armature parallel to the inclined pole surface of said fixed core and a control circuit which energizes said coil with a current of a substantially constant amplitude and a length of time substantially directly proportional to the impact energy to be applied to said hammer, guide means in said fixed core for guiding said hammer, a cavity provided in said hammer, a felt impregnated with lubricating oil contained in said cavity and a hole provided in said hammer and communicative with said guide means for lubricating said guide means.

4,308,795

LOW ENERGY IMPACT PRINTER

David C. Wills, Cambridge; Raymond L. Lawter, Zanesville; Barry D. Briggs, New Concord, and Edward F. Sampson, Cambridge, all of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Dec. 6, 1979, Ser. No. 100,765

Int. Cl.³ B41J *1/08*

U.S. Cl. 101—93.37 **20 Claims**

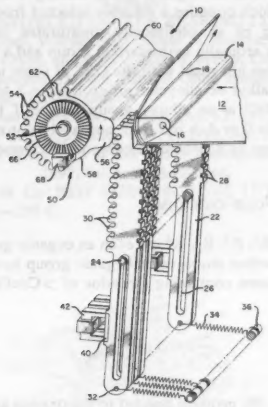
1. An impact printer comprising a

platen member, a

plurality of type character bearing members positionable in relation to said platen member for printing along a line of printing, a

unitary member sequentially engageable with said type character bearing members and having a unitary member portion engageable with said bearing members for moving said bearing members from a home position into a printing position adjacent said platen member for enabling printing

along said line of printing, said unitary member having another portion engageable with said type character bearing members for moving said bearing members toward and into contact with said platen member for printing, said unitary member being disengageable from said type character bearing members for permitting movement of said bearing members toward said home position, and



means for moving said type character bearing members toward said home position from said printing position, said unitary member having a further portion engageable with said type character bearing members for repositioning said bearing members in said home position.

4,308,796

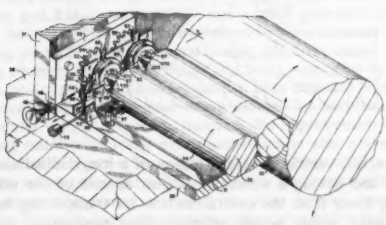
OFFSET LITHOGRAPHIC PRESS WITH INK METERING SYSTEM FOR BLANKET CYLINDER

William L. Satterwhite, Dallas, Tex., assignor to S-W-H, Ltd., St. Louis, Mo.

Filed Jul. 13, 1979, Ser. No. 57,327

Int. Cl.³ B41F *31/06, 31/12, 31/36*

U.S. Cl. 101—143 **4 Claims**



1. Apparatus for attachment to an offset lithographic press of the kind having a plate cylinder, a blanket cylinder, and an impression cylinder, said apparatus comprising:

an ink fountain

an ink transfer roll;

an ink metering system positioned to transfer ink from said fountain to said transfer roll, said metering system including at least one metering roll;

mounting means for mounting said fountain, transfer roll and metering system on said press adjacent its blanket cylinder, said mounting means including means for adjusting the position of said transfer roll with respect to said blanket cylinder said mounting means comprising;

a main mounting plate slidingly mounted on a substantially horizontal surface of said press adjacent said blanket cylinder;

adjusting screw mounting means attached to said press adjacent each end of said main mounting plate;

an adjusting screw confined against endwise movement in its mounting means but free to rotate therein;

threaded means on said main mounting plate threadedly engaging said adjusting screw, whereby rotation of said adjusting screw slides said main mounting plate toward and away from said blanket cylinder;

said fountain being mounted on said main mounting plate; and

said mounting means further comprising:

(i) vertical base plates mounted on said main mounting plate adjacent each end of said fountain; and

(ii) collars mounted on said vertical plates and engaging said metering roll and said transfer roll to support them above said fountain, the upper portion of said collars being pivotable with respect to the lower portions thereof to thereby provide for rapid removal and installation of said rolls out of and into said collars;

means for adjusting the pressure between said metering roll and said transfer roll;

means for moving said transfer roll into and out of contact with said blanket cylinder including means mounting said collars engaging said transfer roll on said vertical base plates for movement with respect to said vertical base plates toward and away from said blanket cylinder; and

a variable speed motor for said metering roll and said transfer roll.

4,308,797

APPARATUS FOR PRINTING OR APPLYING SELF-ADHESIVE LABELS

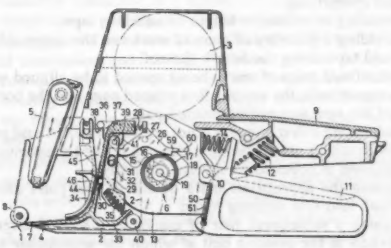
Werner Becker; Günter Holland-Letz, both of Hirschhorn, and Heinrich Volk, Beerfelden, all of Fed. Rep. of Germany, assignors to Esselte Pendaflex Corporation, Garden City, N.Y.

Filed Feb. 12, 1979, Ser. No. 11,644

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1978, 2807056

Int. Cl.³ B41K *5/00*

U.S. Cl. 101—292 **24 Claims**



18. A hand-held labeller for printing and/or applying self-adhesive labels which adhere as a strip or separately at equal distances on a carrier strip, said apparatus comprising

a frame;

a supply member mounted with respect to said frame for mounting said carrier strip and labels;

a label separation member mounted with respect to said frame;

a feed wheel mounted with respect to said frame;

means for guiding said carrier strip from said supply member by said label separation member and then to said feed wheel;

a hand lever so pivotally mounted with respect to said frame

that the lever may be pivoted by an operator's hand as the labeller is being held in the hand of an operator;

coupling means for coupling said hand lever to said feed wheel to operate the feed wheel each time the hand lever is pivoted and thus advance the carrier strip from the supply member so that the labels are successively separated from the carrier strip at the label separation member and the carrier strip is incrementally wound upon the feed wheel;

sensing means for sensing the advancement of said carrier strip a predetermined distance;

de-coupling means for de-actuating said coupling means so that said hand lever is de-coupled from said feed wheel in response to said sensing means sensing the advancement of the carrier strip said predetermined distance and thus ensure that the feed wheel advances the carrier strip said predetermined distance each time the hand lever is actuated regardless of the amount of carrier strip wound upon said feed wheel.

4,308,798

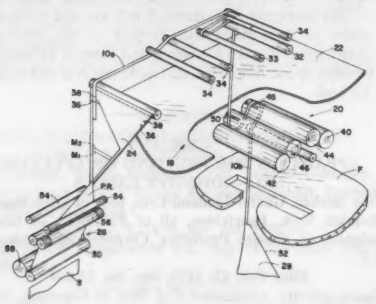
NEWSPRINT PRESS ORIENTATION DEVICE

Bruce E. Carlton, 234 Edgewood Ave., Mill Valley, Calif. 94941

Filed Jul. 25, 1980, Ser. No. 172,402

Int. Cl.³ B41M *1/00*

U.S. Cl. 101—426 **5 Claims**



1. A method of orienting a newsprint web to be fed through a press comprising;

providing an extensive length of adhesive tape;

providing a plurality of pairs of marks on the upper side of said tape along the length thereof;

each of said pairs of marks being spaced to be aligned with, respectively, the top of a first printed page and the bottom of the next succeeding printed page;

establishing a first aligning point on the former of said press with which one of said margins of a printed sheet must be aligned in order to be severed properly;

aligning the appropriate mark of one of said pairs thereof with said first aligning mark;

aligning a subsequent pair of marks with second aligning points in the printing unit at which the appropriate margins of a printing sheet are impressed; and

attaching the trailing end of said tape to said newsprint web to be run through the press.

4,308,799

DRY PLANOGRAPHIC PRINTING PLATE

Takao Kitagawa, Shiga; Shigeo Abiko, and Tadami Kamaishi, both of Ootsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Oct. 27, 1980, Ser. No. 201,087

Claims priority, application Japan, Oct. 25, 1979, 54-138150

Int. Cl.³ B41N *1/00*

U.S. Cl. 101—457 **11 Claims**

1. A dry planographic printing plate which comprises a base substrate and an ink repellent silicone layer overlying the substrate, said silicone layer comprises a mixture of

(A) an organopolysiloxane;

(B) an alkoxy silane represented by the formula

$$R_{4-a-b}R'_aSi(OR'')_b$$

wherein R is an organic group having 1 to 18 carbon atoms which contains a member selected from the group consisting of an olefinically unsaturated hydrocarbon group, an aromatic hydrocarbon group and a polar group which does not react with the OR'' at room temperature, R' is an alkyl or alicyclic group having 1 to 18 carbon atoms, OR'' is an alkoxy group having 1 to 8 carbon atoms, a is 0 or 1, b is 2 or 3, and a+b is at most 3; and

(C) a titanium or a zirconium compound represented by the formula

$$(R^1O)(R^2O)(R^3O)(R^4O)M$$

wherein R^1, R^2, R^3, R^4 are each an organic group having 1 to 18 carbon atoms or an organic group having 1 to 18 carbon atoms containing a residue of >C=O,

by which the group is bonded to the oxygen atom, and M is titanium or zirconium.

4,308,800

RAIL VEHICLE FOR THE TRANSPORT OF HEAVY AND/OR BULKY GOODS

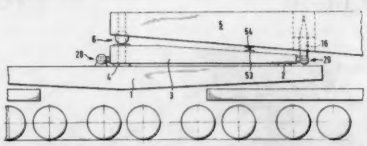
Sandor Mohacsi, Nuremberg; Rudolf Fischer, Ammerndorf, and Anton Raschl, Nuremberg, all of Fed. Rep. of Germany, assignors to Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Nuremberg, Fed. Rep. of Germany

Filed Nov. 13, 1978, Ser. No. 959,881

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1977, 2750412

Int. Cl.³ B61F *1/00, 11/00, 13/00*

U.S. Cl. 105—159 **6 Claims**



1. A rail vehicle having a region of a longitudinal central plane and having a vertical axis near an end of the vehicle facing away from the central section for transporting heavy and bulky goods, which includes: drive mechanism respectively arranged at each end of said vehicle, two loading bridges respectively supported by said drive mechanisms, a beak provided with each loading bridge, a joint about which said beak is rotatable, each of said drive mechanisms comprising a plurality of multi-axle bogies, at least two bridge girders respectively interconnecting said bogies at said vehicle ends, each of said at least two bridge girders pivotally supporting one of said beaks through the intervention of a displaceable member, two displacing mechanisms, each of said displacing mechanisms comprising: a first displacing means including a piston-cylinder drive facing one vehicle end and operatively connected to the respective adjacent displaceable member and also comprising a second displacing means including a piston-cylinderdrive facing the respective pertaining central portion of the vehicle, a pivot operatively connecting the pertaining displaceable mem-

ber to said beak, said pivot being guided on said beak, and electro-hydraulic control means operatively connected to said displacing mechanism for controlling said first and second displacing means including the piston-cylinder drives therewith in conformity with each other and controllable dependent upon each other.

4,308,801

REINFORCED CENTER BEARING LINER

Jerry W. Cooper, Waynesville; Homer N. Holden, Sylva; Doyle V. Haren, Clyde, all of N.C.; John S. Haley, Centerville, and M. John Somers, Dayton, both of Ohio, assignors to Dayco Corporation, Dayton, Ohio

Continuation of Ser. No. 841,175, Oct. 11, 1977, Pat. No. 4,188,888. This application Nov. 8, 1979, Ser. No. 92,300

The portion of the term of this patent subsequent to Feb. 19, 1997, has been disclaimed.

Int. Cl.³ B61F *5/16*; F16C *17/04, 17/10*

U.S. Cl. 105—199 C **17 Claims**

1. In a wear-resistant liner for the center plate structure of a railway vehicle, said liner being defined by an ultra high molecular weight polymeric material, the improvement comprising metal reinforcing means embedded in and surrounded by said polymeric material which serves as a matrix for said reinforcing means, said metal reinforcing means comprising a metal structure having openings therein for receiving said polymeric material completely therethrough and enabling better embedment of said metal structure, said metal structure providing reinforcement and preventing cold flow of said polymeric material, and said metal structure being a grid-like structure.

10. In a railway vehicle having a body provided with a body bolster and a body center plate, and a truck provided with a truck bolster and a bolster bowl defined by a truck center plate having an upstanding peripheral flange, said body center plate being received within said flange and being supported by said truck center plate, and a wear-resistant liner disposed between said center plates, said liner being defined by an ultra high molecular weight polymeric material, the improvement comprising metal reinforcing means embedded in said polymeric material which serves as a matrix for and substantially completely surrounds said reinforcing means, said metal reinforcing means comprising a metal structure having openings therein for receiving said polymeric material completely therethrough and enabling better embedment of said metal structure, said metal structure providing reinforcement and preventing cold flow of said polymeric material, and said polymeric material being polyethylene.

14. In a railway car having a body provided with a body bolster and a body center plate, a truck provided with a truck bolster and a bolster bowl defined by a truck center plate having an upstanding peripheral flange, said body center plate being received within said flange and being supported by said truck center plate, said center plate and bolsters having cooperating vertically aligned openings, a center pin extending through said openings, and a wear-resistant liner disposed between said center plates, said liner being defined by an ultra high molecular weight polymeric material consisting of polyethylene, said liner having a central opening therein for receiving said pin therethrough, the improvement comprising metal reinforcing means embedded in said polymeric material which serves as a matrix for and substantially completely surrounds said reinforcing means, said metal reinforcing means comprising a metal structure having openings therein for receiving said polymeric material completely therethrough and enabling better embedment of said metal structure, said metal structure providing reinforcement and preventing cold flow of said polymeric material, and said liner comprising a flat disc-like portion and said central opening is disposed centrally therein and has a right circular cylindrical configuration.

4,308,802

ARRANGEMENT FOR DETACHABLE JOINING OF CONSTRUCTION PARTS

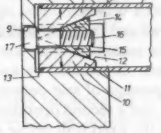
Johann Munz, Hinwil, Switzerland, assignor to Team Form AG, Hinwil, Switzerland

Filed Sep. 4, 1979, Ser. No. 72,551

Claims priority, application Switzerland, Sep. 4, 1978, 9276/78

Int. Cl.³ A47B *3/06, 13/02*

U.S. Cl. 108—156 **8 Claims**



1. Apparatus, comprising

a first construction part,

a second construction part,

said first construction part being constructed for being detachably connected in a connected position to a second construction part by a connection end on the first part being located in a connection opening on the second part,

said connection end having a tubular portion being non-round in cross section, having two longitudinal slots extending approximately parallel with each other and with the tubular axis, and having an open outer end on each slot,

said second construction part extending in connected position at an angle to the first construction part, being solid in cross section, and having said connection opening, corresponding in cross-sectional shape to the tubular portion of the connection end of the first construction part for the telescopic engagement of the first construction part into the second construction part, and

a set of clamping pieces having their outer surfaces constructed to telescopically receive said tubular portion and the slotted end of the first construction part, and having inner wedge surfaces,

a tension wedge having a central threaded bore and wedging outer surfaces engaging the wedge surfaces of said clamping pieces, and

a screw screwed into the threaded bore in the tension wedge, supported by its head end operatively bearing against the clamping pieces, and having its threaded shank locatable within the inside of the tubular bore and the connection end of the first construction part.

4,308,803

PROTECTIVE DOOR SYSTEMS

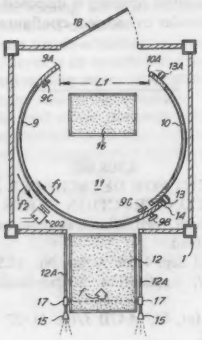
Gisberto Pretini, Pisa, Italy

Filed Jan. 10, 1980, Ser. No. 111,003

Claims priority, application Italy, Jan. 31, 1979, 9332 A/79; Feb. 13, 1979, 9343 A/79

Int. Cl.³ G08B *13/00*; H04N *7/18*; E06B *5/00*

U.S. Cl. 109—3 **10 Claims**



1. A robbery protection door system for providing a passage into a protected room from the exterior of the room, the door system comprising a fixed wall, a mobile wall in the form of a sector of a cylindrical surface arranged with the axis thereof vertical, manually operable means for rotating the mobile wall about said vertical axis between a first operational position in which the mobile wall and the fixed wall define a first aperture therebetween for the passage of a person from the exterior of the room into a space surrounded by said walls and also co-operate to prevent passage of said person from the space into the protected room, and a second operational position in which the mobile wall and the fixed wall define a second aperture for the passage of a person from the space into the protected room and also co-operate to prevent passage of a person from the exterior of the room into the space, automatic control means for checking persons using the door system and for blocking the passage of any person failing the check, and said control means including a footboard switch arranged between the first aperture and the exterior, the control means locking the mobile wall if the weight of more than one person acts on the footboard switch.

4,308,804

AUTOMATIC CASH DEPOSITORY

Ronald D. Guibord, Boylston; Robert G. Yetman, Carlisle, and Richard G. Harris, Franklin, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Nov. 8, 1979, Ser. No. 92,525

Int. Cl.³ G01D *9/00*; E05G *1/00*; G06F *15/30*

U.S. Cl. 109—24.1 **11 Claims**

1. A deposit system comprising, in combination:

an operator panel including means for permitting an operator to make a deposit request;

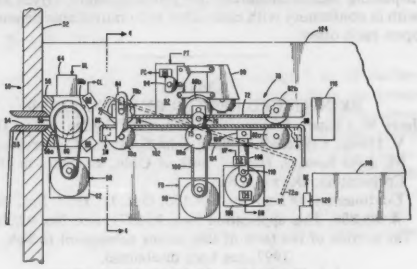
deposit means adjacent said operator panel for receiving a deposit container inserted by said operator;

transport means including a feed platform and feed rolls mounted thereon for guiding and feeding said container along a blind entrance path;

first sensing means for indicating when a container has been inserted into said deposit means;

drive means operating in response to said first sensing means for rotating said feed rolls to feed an inserted container across said platform and along said entrance path;

second sensing means for generating a position signal when said container reaches a predetermined position on said entrance path; and



shift means responsive to said position signal for shifting said transport means to guide and feed said container along an exit path different from said entrance path, whereby said container is delivered to a deposit receptacle.

4,308,805

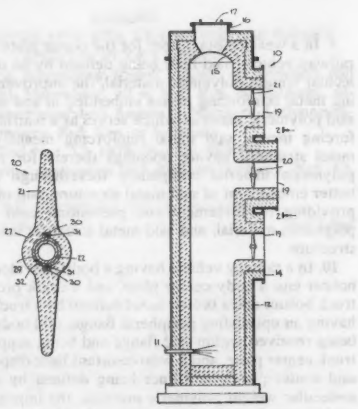
HIGH TEMPERATURE DAMPER

Stuart S. Spater, Livingston, N.J., assignor to Nichols Engineering & Research Corp., Belle Mead, N.J.

Filed Jul. 16, 1979, Ser. No. 57,699

Int. Cl.³ F23L *1/00, 13/00*

U.S. Cl. 110—163 **5 Claims**



1. A multiple hearth furnace including:

a plurality of vertically aligned hearths defining hearth chambers therebetween;

means defining breeching ports in selected hearth chambers;

an elongated, rotatable shaft extending up through the center of the furnace and passing thrugh the floor of each hearth;

means for moving material to be processed in the furnace downwardly to successively adjacent hearth chambers upon rotation of said shaft;

means external of said furnace for generating high temperature gases to be conducted to selected hearth chambers for treating therein the material to be processed;

conduit means connecting said high temperature gas generating means to said breeching ports;

a blade of high temperature ceramic material formed with a bore along an axis thereof, said blade selectively adjusting the cross-sectional area of said conduit means;

a hollow shaft mounted transversely of said conduit and

extending into said bore and keyed to said blade to impart rotary movement to said blade about said axis upon rotation of said shaft, whereby said blade selectively adjusts the cross-sectional area of said conduit means;

means for directing a flow of cooling medium through said shaft; and

an insulating sleeve disposed between said shaft and the surface of said bore for restricting the transfer of heat from said blade to said shaft.

4,308,806

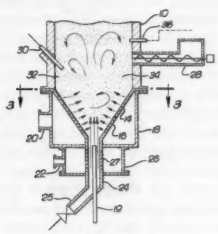
INCINERATOR FOR BURNING WASTE AND A METHOD OF UTILIZING SAME

Toshio Uemura; Yoshiki Watanabe; Yoji Masumoto; Tomihisa Ishikawa; Noboru Kajimoto, all of Kure, and Shin Kawada, Ohtemachi, all of Japan, assignors to Babcock-Hitachi Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 893,261, Apr. 5, 1978, Pat. No. 4,177,742. This application Jul. 20, 1979, Ser. No. 59,167

Int. Cl.³ F23G *7/00*

U.S. Cl. 110—244 **7 Claims**



1. An incinerator for burning waste comprising:

a hollow body having an opened upper end forming an outlet and an opened lower end;

a bottom plate closing the lower end, said bottom plate being cone-shaped;

a central opening provided in the bottom plate for introducing pressurized oxidizing gas into the hollow body;

a plurality of openings disposed in a circumferential direction of said bottom plate so that a pressurized oxidizing gas can make swirls along said cone-shaped bottom plate;

an oxidizing gas feeding means for supplying gas to the central opening and the circumferentially disposed openings, said oxidizing gas feeding means comprising:

a gas box surrounding said cone-shaped bottom plate into which pressurized gas is introduced;

a pipe coupled to said central opening; and

a smaller pipe provided within the other pipe and forming an annular clearance between the exterior of said smaller pipe and the interior of said other pipe whereby combustion residue is discharged through said annular clearance; and

heat transfer medium particles provided in the hollow body and fluidized by the oxidizing gas introduced into the hollow body; and

a means for feeding waste into the hollow body.

4,308,807

APPARATUS FOR PYROLYSIS OF MUNICIPAL WASTE UTILIZING HEAT RECOVERY

Samuel L. Stokes, 17101 Usher Pl., Upper Marlboro, Md. 20870

Filed Mar. 17, 1980, Ser. No. 130,811

Int. Cl.³ F23G *5/00*

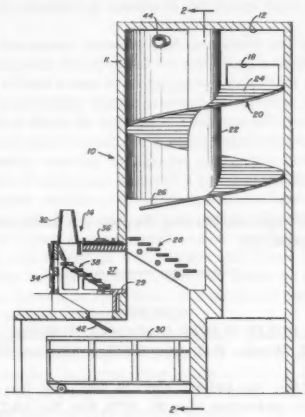
U.S. Cl. 110—257 **8 Claims**

1. Apparatus for pyrolytically treating municipal wastes comprised of heat-decomposable material which, when subjected to direct contact with a hot, non-oxidizing atmosphere, form gaseous pyrolytic decomposition products, comprising:

a generally vertically extending pyrolysis chamber adapted to receive heat energy thereinto for providing a heated, non-oxidizing atmosphere therein;

means for charging the heat-decomposable material into the pyrolysis chamber;

generally vertically disposed at least partially gas transmissive spiral firing rack means within the pyrolysis chamber and extending generally to the inner surface of the wall defining the chamber, said spiral firing rack means being associated with the charging means wherein material to be



treated is progressively fed along the firing rack means at least in part by virtue of the movement of material onto said firing rack means by the charging means wherein the material to be treated is subjected to the heated, non-oxidizing atmosphere within the pyrolysis chamber during movement of the material downwardly along the firing rack means;

burner means for charging heated, non-oxidizing gases into the pyrolysis chamber to produce a pyrolytic atmosphere therewithin; and

means for removing residues formed by the pyrolysis reaction within the pyrolysis chamber.

4,308,808

COAL BURNING METHOD TO REDUCE PARTICULATE AND SULFUR EMISSIONS

Melvin H. Brown, Freeport, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 47,004, Jun. 11, 1979, Pat. No. 4,232,615. This application Sep. 2, 1980, Ser. No. 183,617

The portion of the term of this patent subsequent to Nov. 11, 1997, has been disclaimed.

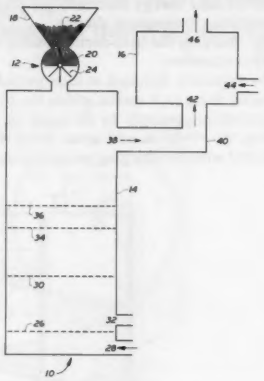
Int. Cl.³ F23K *1/02;* **F23N** *3/00*

U.S. Cl. 110—342 **15 Claims**

1. A method for burning a pulverized carbonaceous material containing sulfur and ash, comprising forming a slurry containing the carbonaceous material, water, a reagent adapted to react with the sulfur and a cementing agent, burning the slurry in a first stage with less than 100% theoretical air, removing the combustible gases from the first stage to a second stage, and burning the gases in the second stage with additional air.

14. A method of burning a pulverized carbonaceous material containing sulfur and ash, comprising forming a slurry containing between 45% and 65% by weight of the carbonaceous material, between 30% and 45% by weight water and between 5% and 15% by weight calcium oxide, allowing the slurry to harden by reaction of the water with the calcium oxide, burn-

ing the slurry in a first stage with less than 100% theoretical air, removing the products of combustion from the first stage



to a second stage, and burning the products in the second stage with additional air.

4,308,809

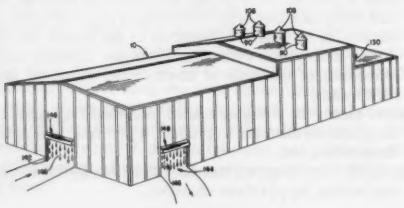
SOLID WASTE DISPOSAL SYSTEM

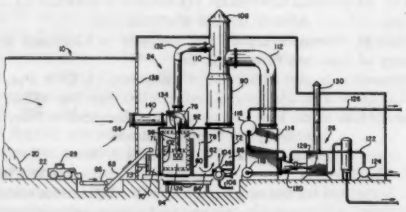
Maurice G. Woods, P.O. Box 18662, Oklahoma City, Okla. 73118

Division of Ser. No. 843,855, Oct. 20, 1977, Pat. No. 4,193,354. This application May 30, 1979, Ser. No. 43,739

Int. Cl.[3] F23G *5/12*

U.S. Cl. 110—346 **7 Claims**





1. A method for disposal of municipal solid waste comprising the steps of:

accumulating the municipal solid waste in a first storage region of a building enclosure;

processing the municipal solid waste to provide a volume of generally combustible, comminuted refuse;

accumulating the generally combustible, comminuted refuse in a second open floor storage region of the building enclosure;

incinerating the combustible refuse in a combustion chamber connected in fluid connection with the interior of the enclosure; and,

evacuating air from the interior of the enclosure into the combustion chamber at a rate sufficient to support combustion and at a rate sufficient to maintain a relatively low pressure condition inside of the enclosure relative to the atmospheric pressure of the ambient air surrounding the enclosure whereby interior air, particulate material and malodorous gases emanating from the accumulated municipal solid waste are drawn into combustion.

4,308,810

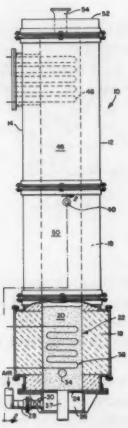
APPARATUS AND METHOD FOR REDUCTION OF NOX EMISSIONS FROM A FLUID BED COMBUSTION SYSTEM THROUGH STAGED COMBUSTION

Thomas E. Taylor, Bergenfield, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Apr. 9, 1980, Ser. No. 138,799

Int. Cl.[3] F23M *3/04*; F23K *1/00*

U.S. Cl. 110—347 **7 Claims**



1. A non-catalytic two stage combustion process for reducing emissions of nitrogen oxides (NOx) produced during combustion of nitrogen-containing fuel while maintaining efficient capture of sulfur oxides (SOx), comprising the steps of:

(a) providing a non-catalytic fluidized bed of particulate material including a nitrogen-containing fuel without catalyst and an adsorbent for the capture of sulfur oxides (SOx), wherein the temperature in said non-catalytic fluidized bed is within the range of 1500° to 1650° F.;

(b) introducing air into said fuel to fluidize said bed and promote the combustion of said fuel to form a primary combustion stage;

(c) introducing additional fuel to said bed to replenish the combusted fuel;

(d) controlling the fuel feed rate or controlling the air feed rate to achieve combustion in said primary combustion stage under continuous substoichiometric conditions; and,

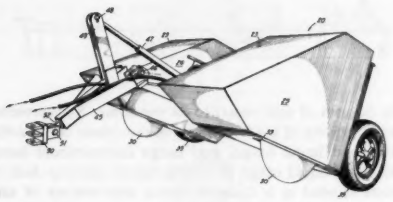
(e) providing a second combustion zone which is not a fluidized bed by introducing air into the combustion offgas above said fluidized bed to produce combustion under stoichiometric conditions, wherein the temperature in said second combustion zone is within the range of 1300° to 1650° F.;

whereby said combustion process has a reduced NOx emissions level while maintaining efficient capture of sulfur oxides (SOx).

4,308,811
TWO ROW TREE PLANTER

Coleman Bass, Rte. 1, Box 36, Greenville, Ga. 30222

Continuation of Ser. No. 968,976, Dec. 13, 1978, abandoned.
This application Aug. 4, 1980, Ser. No. 175,347
Int. Cl.[3] A01C *11/00*
U.S. Cl. 111—3 2 Claims

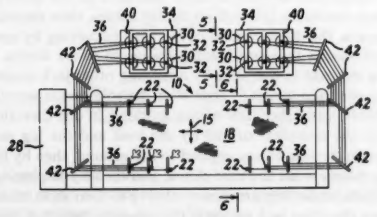


1. A tree planter comprising a planter body having a floor and a pair of laterally spaced worker compartments on the floor each containing a protected worker seat, supply containers for seedling trees on the floor of the planter body between the worker compartments and being accessible to workers on said seat, a pair of support wheels on the rear of the planter body including axles which are extensible and retractable and swingable in a vertical plane, spring means to resist vertical swinging of the axles in one direction, a single pair of flat furrow opening discs on the planter body slightly forwardly of said seats and slightly laterally inwardly of said rear support wheels and being the sole furrow forming means of the planter, support means for said discs on said floor and said floor being provided with slots through which the discs project downwardly below the floor, the discs being toed inwardly toward the longitudinal center line of the planter and being tilted laterally with their tops displaced toward the center line, whereby the discs upon opening furrows during forward movement of the planter force a ridge of soil laterally outwardly of the furrow and said wheels following the discs roll over said ridge, and an adjustable hitch of the vertically swinging type and having power operating means on the front of the planter whereby said discs can be raised and lowered relative to said wheels.

4,308,812
EMBROIDERY MACHINE HAVING IMPROVED THREAD SUPPLY SYSTEM

Harry Lenson, 822 E. Lawn Dr., Teaneck, N.J. 07666

Filed Mar. 17, 1980, Ser. No. 130,980
Int. Cl.[3] D05C *3/04, 11/08*
U.S. Cl. 112—97 7 Claims



1. In an automatic shuttle embroidery machine of the type comprising a frame for holding in a substantially vertical plane a fabric onto which a pattern is to be embroidered, means for reciprocatably moving said frame along two perpendicular coordinates of said plane, a plurality of substantially horizontal reciprocatable needles supported on said machine to periodically stitch said fabric with thread, said needles being spaced along said frame in substantially equal intervals, means for supplying thread from a plurality of spools mounted in an arrangement substantially proximate said needles wherein each one of said spools is respectively associated with a needle for supplying thread thereto, the diameter of said spool being determined by the spaced interval between said needles and means for moving said needles in timed relation with said fabric to produce by stitching a pattern on said fabric of a particular configuration, the improvement comprising:

means for mounting a plurality of cones of thread at a location distant from said needles to replace said spools, said mounting means including means for supporting cones having a diameter greater than the diameter of said spools,

means for producing tension in the thread from each cone, and

means interposed between said cones and said needles for guiding said thread under tension along a fixed path from each of said cones to a respective one of said needles.

7. In an automatic shuttle embroidery machine of the type comprising a frame for holding in a substantially vertical plane a fabric onto which a pattern is to be embroidered, means for reciprocatably moving said frame along two perpendicular coordinates of said plane, a plurality of substantially horizontal reciprocatable needles supported on said machine to periodically stitch said fabric with thread, said needles being spaced along said frame in substantially equal intervals, means for supplying said thread to said needles and means for moving said needles in timed relation with said fabric to produce by stitching a pattern on said fabric of a particular configuration, the improvement wherein,

said thread supplying means comprises means for mounting a plurality of cones of thread at a location distant from said needles, said mounting means including means capable of supporting cones having a radius greater than the spaced interval between said needles,

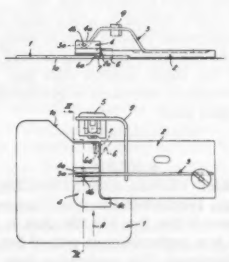
means for producing tension in the thread from each cone, and

means interposed between said cones and said needles for guiding said thread under tension along a fixed path from each of said cones to a respective one of said needles.

4,308,813
DEVICE FOR FORMING A HEM ON FABRIC EDGES WITH THE USE OF A SEWING MACHINE

Heinz Janouschek, Steckborn, Switzerland, assignor to Fritz Gegauf Aktiengesellschaft Bernina-Nahmaschinenfabrik, Steckborn, Switzerland

Filed Oct. 18, 1979, Ser. No. 85,987
Claims priority, application Switzerland, Nov. 1, 1978, 11242/78
Int. Cl.[3] D05B *35/04*
U.S. Cl. 112—143 7 Claims



1. A device for forming hems on fabric edges on a sewing machine, with a ruler guiding the edge of the sewing material and with means arranged on a base plate for forming the hem, characterized in that a guide shoe is associated with an edge

contact surface of the ruler located vertically above the base plate, said guide shoe acting on the sewing material under spring pressure and exhibiting in the zone of the edge contact surface a turndown nose portion disposed in parallel to this surface, said nose portion, in cooperation with a beveled surface of the base plate located at an acute angle to the edge contact surface of the ruler, effecting the hem formation.

4,308,814

ELECTRONIC SEWING MACHINE WITH A STITCH CONTROL DEVICE

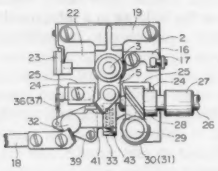
Hideaki Takenoya, Hachioji, Japan, assignor to Janome Sewing Machine Co., Ltd., Tokyo, Japan

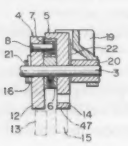
Filed Mar. 31, 1980, Ser. No. 136,043

Claims priority, application Japan, Apr. 20, 1979, 54-47881; May 22, 1979, 54-62243

Int. Cl.³ D05B *3/02*

U.S. Cl. 112—158 E **17 Claims**





1. A system for use in a sewing machine, the system operating a needle swing mechanism and a feed dog mechanism in synchronism with rotation of a main shaft that provides mechanical motion used to reciprocate a needle, and the system accomplishing such operation using only one motor comprising:

exactly one motor;

a transmission driven by the motor and linked to the main shaft, the transmission alternately connecting and disconnecting the needle swing mechanism and the feed dog mechanism to and from the motor in accordance with position of the main shaft, the transmission operating in a manner that when a one of the feed dog mechanism and the needle swing mechanism is connected to and moved by the motor, another one of the feed dog mechanism and the needle swing mechanism is disconnected from the motor and prevented from moving; and

an electronic control system in which stitch control data is stored, the electronic control system being connected to the motor and the main shaft and driving the motor by reading out the stitch control data and operating the motor in accordance therewith in synchronism with rotation of the main shaft.

4,308,815

TANKER VESSEL CONSTRUCTION

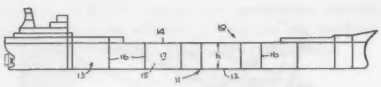
Charles S. Conway, Featherbed La., New Vernon, N.J. 07976

Continuation-in-part of Ser. No. 913,956, Jun. 9, 1978, Pat. No. 4,241,683, which is a continuation-in-part of Ser. No. 809,395, Jun. 23, 1977, abandoned. This application Aug. 21, 1980, Ser. No. 180,045

Int. Cl.³ B63B *25/08*

U.S. Cl. 114—74 R **8 Claims**

1. In a tanker vessel for carrying liquid cargo having a specific gravity which is less than that of sea water, said vessel including a hull comprising a bottom and sides, a top deck, and at least one cargo compartment disposed between said top deck and said hull bottom for storing said liquid cargo, the improvement comprising said top deck of said vessel being located at a distance above said hull bottom which is approximately equal to $H(S_w/S_c)$, where H represents the distance



from the bottom of said vessel to its waterline, S_w represents the specific gravity of sea water, and S_c represents the specific gravity of said liquid cargo, said cargo compartment being filled with said liquid cargo to a point below said top deck of said vessel located at a distance above said bottom of said vessel which is approximately equal to $H(S_w/S_c)-0.03H$.

4,308,816

AMPHIBIOUS INDUSTRIAL LANDING STAGES WHICH CAN BE RUN AGROUND AND MEANS FOR THE DISPLACEMENT OF HEAVY LOADS TO THE GROUNDS

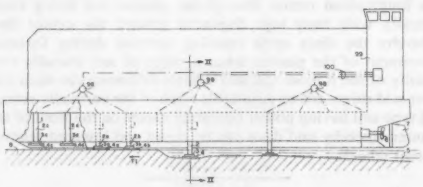
Louis J. Jourdan, 36, rue de Dinan, 35120 Dol de Bretagne, France

Filed Nov. 9, 1978, Ser. No. 959,107

Claims priority, application France, Nov. 16, 1977, 77 34967

Int. Cl.³ B60F *3/00*

U.S. Cl. 114—270 **10 Claims**



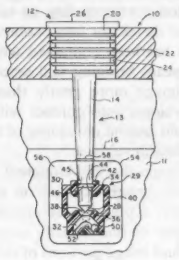
1. Transport means for displacement of heavy loads, on the ground, on a beach, and in shallow water, said transport means comprising sets of practically vertical leg means mounted to raise and lower in lockers made in the load to be displaced, the lower end of each leg means resting directly on the top of a shoe means capable of sliding over the surface of an associated sole means, whereby the full weight that is supported by said leg is transferred directly through said shoe to the underlying sole, jack means for controlling the leg means, shoe means, and sole means, the displacement of the load occurring by operating jack means to cause the leg means to move down, thus causing the load to rise, then by operating other jack means for causing the shoe means to slide over the sole means associated with them, said other jack means working in one direction to displace the complex formed by the load and the leg means, relative to the sole means applied to the ground, then by lifting the leg means to set the load down, and then by displacing the sole means while they are raised relative to their shoe means by working the other jack means in the opposite direction, said leg means being movable and comprising, at their upper ends, arm means attached to each leg for engaging a groove wit n the cross section of its associated locker and thereby locking the leg in position, and means for automatically moving said locking means to their locked position when a leg means is pushed into a locker and when said locking means reach the groove in said cross section of the associated locker.

4,308,817

STATE OF CHARGE BATTERY MONITOR

Francis C. Peterson, St. Charles, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Aug. 19, 1980, Ser. No. 179,595
Int. Cl.³ G01F *23/02*; H01M *31/04*
U.S. Cl. 116—215 20 Claims



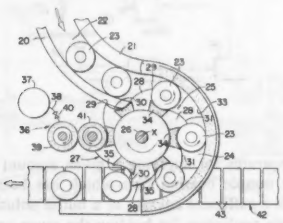
1. A monitor for monitoring the state of charge of a battery having an internal charge transfer medium comprising: detecting means arranged to be disposed beneath the surface of said charge transfer medium and arranged for sensing the specific gravity of a fluid medium; enclosure means for enclosing said detecting means; a fluid medium within said enclosure means, said fluid medium exhibiting specific gravities related to the degree of electric charge therein, said enclosure means being formed at least partly from a non-permeable electric charge transmissible material to enable said fluid medium to assume the electric charge of said charge transfer medium while substantially separating said fluid medium therefrom; and indicating means responsive to said detecting means for indicating the specific gravity of said fluid medium and thus the state of charge of the battery.

4,308,818

APPARATUS FOR COATING BOTTLES OR LIKE CYLINDRICAL ARTICLES

Ichiro Abe; Takashi Suzuki, and Toshio Ebara, all of Takasaki, Japan, assignors to Kirin Beer Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 3, 1980, Ser. No. 136,865
Claims priority, application Japan, Apr. 9, 1979, [illegible]1-42670
Int. Cl.³ B05C *1/02*
U.S. Cl. 118—211 13 Claims



1. Apparatus for coating a succession of substantially cylindrical or round articles such as bottles with a desired coating substance, comprising, in combination:

(a) Guide means defining an arcuate guideway for the passage of successive articles to be coated, said arcuate guideway being centered at a predetermined axis and said guide means having an arcuate guide surface made of a material capable of offering a high frictional resistance to each article to be coated;

(b) feed means comprising at least one star wheel for feeding the successive articles along the arcuate guideway while pressing the articles against the guide surface of the guide means itself, said star wheel having teeth each of which has at least a concave leading side having a smoothly finished surface for sliding contact with the article with a little frictional resistance, whereby said star wheel is adapted to permit rotations of each article about its own axis in sliding contact with the star wheel and in frictional contact with the guide surface of the guide means;

(c) coating means rotatable about a predetermined axis and adapted to be pressed against the successive articles being fed along the arcuate guideway for application of a desired coating substance thereto; and

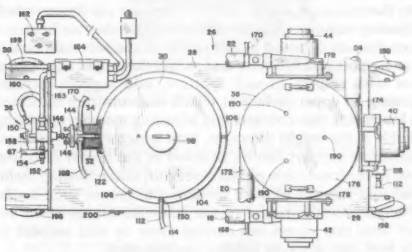
(d) whereby at least one band-shaped film of the coating substance is created around each article by the coating means.

4,308,819

SYSTEM FOR SPRAYING FLUIDIZED POWDER CIRCUMFERENTIALLY AROUND A PIPE JOINT

Robert J. Hart, Tulsa, Okla., assignor to Commercial Resins Co., Tulsa, Okla.

Filed Aug. 11, 1980, Ser. No. 177,086
Int. Cl.³ B05C *19/00*
U.S. Cl. 118—307 7 Claims



1. An improved system for spraying fluidized powder circumferentially around a pipe joint comprising a powder applicator ring engageable with a pipe, means for driving the ring circumferentially about said pipe, a pair of circumferentially spaced powder dispensers mounted on said ring and disposed over said pipe joint, a powder fluidization chamber comprising a hollow container adapted to contain a quantity of powder therein, means for sealing said chamber, means for introducing a stream of air into said chamber to fluidize the powder therein, a cylindrical powder recovery canister having a pair of axially opposed powder blowers mounted thereon, said powder blowers having their intakes in communication with the interior of said recovery canister, each powder blower having an outlet from which a stream of air is allowed to pass, a pair of tangential inlet pipes circumferentially spaced and connecting with the interior of said recovery canister, a pair of powder control valves connected to said chamber and in communication with said fluidized powder therein, means for actuating said powder control valves wherein a quantity of fluidized powder is exhausted into an orifice in each powder control valve, means for introducing the exhausted fluidized powder from said powder control valves into the sides of each outlet from said powder blowers, respectively, a supply conduit connecting each said outlet with a respective portion of each powder dispenser for supplying a stream of fluidized powder to each powder dispensing device, a return conduit connecting each tangential inlet pipe of said recovery canister to another portion of each powder dispenser for returning excess powder to said recovery canister, and a fluidization blower having its suction from the atmosphere and from which a stream of fluidizing air is allowed to pass into said chamber.

4,308,820
APPARATUS FOR EPITAXIAL CRYSTAL GROWTH FROM THE LIQUID PHASE

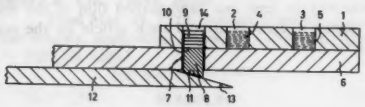
Theodorus G. J. van Oirschot; Willem Nijman, both of Eindhoven, Netherlands, and Marc P. A. Fougeres, Paris, France, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 580,185, May 23, 1975, abandoned, which is a division of Ser. No. 464,790, Apr. 29, 1974, Pat. No. 3,940,296. This application Jan. 25, 1977, Ser. No. 762,429

Claims priority, application Netherlands, May 1, 1973, 7306004

Int. Cl.³ B05C *3/18*

U.S. Cl. 118—412 **5 Claims**



1. A device for providing an epitaxial semiconductor material layer on a substrate, comprising a slide mechanism that comprises a reservoir holder and a substrate holder, said reservoir holder comprising at least one aperture for holding a solution which contains said semiconductor material and said substrate holder having at least one recess that extends completely therethrough and in which a substrate can be provided, an adjusting member slidably related to said substrate holder, a support element disposed in said recess of said substrate holder so as to support said substrate and permit the height adjustment thereof with respect to said aperture, said support element comprising an upper surface at which said substrate is located and a lower side that contacts said adjusting member and being adjustable in the height direction, with which support element said substrate support can be adjusted in the height direction relative to the lower side of said reservoir, said adjusting member and said support element co-acting to permit such a substrate located in the recess of the substrate holder to be removed from said recess and carried away by said support to said at least one aperture holding said solution.

4,308,821
ELECTROPHOTOGRAPHIC DEVELOPMENT APPARATUS

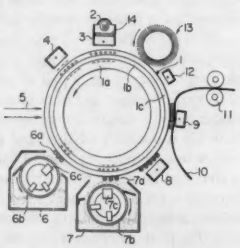
Fuyuhiko Matsumoto, Tokyo, and Shuichi Karasawa, Kokubunji, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 17, 1979, Ser. No. 76,308

Claims priority, application Japan, Sep. 22, 1978, 53/116882; Dec. 5, 1978, 53/150717

Int. Cl.³ G03G *15/01*

U.S. Cl. 118—645 **6 Claims**



1. An electrophotographic development apparatus for developing electrostatic images formed on an image carrying member movable past a plurality of processing stations and having image portions of one polarity corresponding to one color of an original and image portions of the opposite polarity corresponding to another color of the original, comprising first means forming a magnetic brush of first developer having a toner of one of said colors and charged to a polarity opposite to that of said image portion corresponding to one of said colors for bringing said first developer into contact with an electrostatic image formed on said member, and second means forming a magnetic brush of second developer having a toner of the other color and charged to the polarity opposite to that of said image portion corresponding to said other color for bringing said second developer into contact with the electrostatic image after it has been contacted with said first developer, said second means bringing said second developer into contact with said image more gently than said first means brings said first developer into contact with said member to avoid abrasion by said second developer of the image portions developed by said first developer.

6. An electrophotographic development apparatus for developing electrostatic images formed on an image carrying member movable past a plurality of processing stations and having image portions of one polarity corresponding to one color of an original and image portions of the opposite polarity corresponding to another color of the original, comprising first means forming a magnetic brush of first developer having a toner of one of said colors and charged to a polarity opposite to that of said image portion corresponding to said one of said colors for bringing said first developer into contact with an electrostatic image formed on said member, and second means forming a magnetic brush of second developer having a toner of the other color and charged to the polarity opposite to that of said image portion corresponding to said other color for bringing said second developer into contact with said member after it has been contacted with said first developer, the toner of said first means having a higher charge per unit weight than the toner of said second means.

4,308,822
APPARATUS FOR APPLYING SAMPLE LIQUID ONTO SAMPLE BEARING FILM

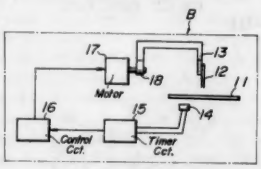
Kazuo Hijikata, and Ryo Fujimori, both of Hachioji, Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

Filed Jun. 4, 1980, Ser. No. 156,859

Claims priority, application Japan, Jun. 5, 1979, 54-69455

Int. Cl.³ B05C *1/16, 11/00*

U.S. Cl. 118—665 **5 Claims**



1. An apparatus for applying a given amount of a sample liquid to a sample bearing film which has been previously wetted with a sufficient amount of a buffer solution comprising: a sample applicator for holding the given amount of the sample liquid to be applied to the sample bearing film; wetness detecting means for metering a humidity of an atmosphere surrounding the sample bearing film wetted with the buffer solution to detect a wetness of the film; a variable timer circuit for presetting an application delay time as a function of the detected wetness of the film; a control circuit in response to a timing signal which is produced from said timer circuit when said preset application time has been elapsed, for actuating automatically said sample applicator to apply the sample liquid to the sample bearing film under such a condition that the film

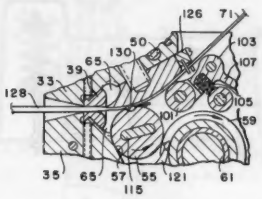
is in a suitable wet condition for being applied with the sample liquid.

4,308,823

KNOT PASSING COATING APPARATUS

Norman E. Klein, Inman, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Apr. 4, 1978, Ser. No. 893,518
Int. Cl.³ B05C *3/02*
U.S. Cl. 118—670 **7 Claims**



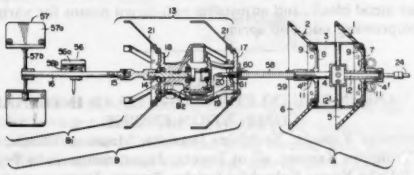
1. An improved cord coating apparatus of the type having:
housing means defining an extrusion chamber, said chamber having a cord entrance means, a coating material entrance means and an exit means for coated cord;
means for supplying cord to the cord entrance means to said extrusion chamber;
means for supplying coating material to said coating material entrance means to said extrusion chamber; and
means for withdrawing coated cord from said exit; means wherein the improvement comprises:
means for detecting sudden enlargements in said cord; and
means operatively associated with said means for detecting sudden enlargements for increasing the effective size of the cord entrance means to said extrusion chamber at the time of arrival of said enlargement of said cord entrance means to allow said enlargement to enter said extrusion chamber and be coated by said coating material.

4,308,824

APPARATUS FOR REINFORCING AND REPAIRING PIPING

Natsuo Muta, Fukuoka, and Toshihisa Kanamaru, Kitakyushu, both of Japan, assignors to Kabushiki Kaisha Kankyo Kaihatsu, Fukuoka, Japan

Filed Feb. 29, 1980, Ser. No. 125,772
Claims priority, application Japan, Nov. 22, 1979, 54-151727
Int. Cl.³ B05C *7/08*
U.S. Cl. 118—713 **22 Claims**



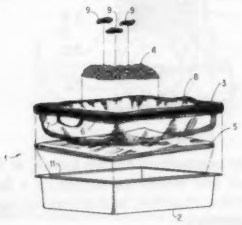
1. Apparatus for reinforcing and repairing a pipe line, said apparatus comprising:
(a) means for forming a film on the inside of said pipe line;
(b) means for adjusting the amount of said film formed;
(c) means for inspecting said film forming means and the inside of said pipe;
(d) means for flexibly connecting said film forming means, said film adjusting means, and said inspecting means, said inspecting means being maintained at a predetermined distance away from said film forming means and being movable with said film forming means;
(e) means for hauling said film forming means, said film adjusting means, and said inspecting means within said pipe line along a predetermined direction of movement, whereby said inspecting means are disposed forwardly of said film forming means, as viewed in said direction of movement, said inspecting means thereby having a viewing angle directed rearwardly towards said film forming means; and
(f) means for supplying film forming material to said film forming means.

4,308,825

PET WASTE ODOR REMOVING DEVICE

Josephine W. Stepanian, 419 Lakeview Dr., Summerville, S.C. 29483

Filed Sep. 4, 1980, Ser. No. 184,152
Int. Cl.³ A01K *23/00*
U.S. Cl. 119—1 **8 Claims**



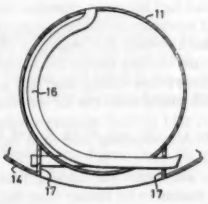
1. A device for holding pet waste materials comprising:
a. a receptacle with vertical sides;
b. absorbent, porous material placed into said receptacle operative to substantially cover the bottom of said receptacle;
c. screen material, that is re-usable, placed onto said absorbent, porous material and removably secured onto said receptacle; and
d. securing means secured within said screen material operative to extend over said vertical sides of said receptacle to secure said screen material onto said receptacle;
whereby the liquid portion of said pet waste materials will pass through said screen material into said absorbent, porous material.

4,308,826

SHELL BOILERS

John P. Moore, Gainsborough, England, assignor to Vosper Thornycroft (UK) Limited, England

Filed Nov. 13, 1978, Ser. No. 960,128
Int. Cl.³ F22B *1/02*
U.S. Cl. 122—4 D **10 Claims**



1. A horizontal shell boiler comprising a shell, a horizontal passage extending through the shell, a space between the shell and the passage containing boiler fluid, at least one opening

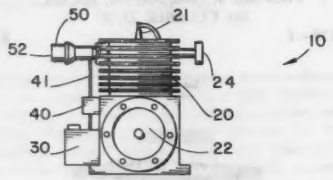
extending downwardly from the passage to the bottom of the shell forming a furnace section with the passage for housing a fluidized bed therein, and heat transfer pipes extending vertically through the furnace section for extending through and above the fluidized bed, the heat transfer pipes being provided throughout the length of the furnace section and being connected to the space between the shell and the passage for natural circulation of the boiler fluid therethrough.

4,308,827

FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Stephen E. Roe, R.R. 2, Roachdale, Ind. 46172

Filed Oct. 19, 1979, Ser. No. 86,298
Int. Cl.³ F02M *31/20*
U.S. Cl. 123—541 **5 Claims**



1. An internal combustion engine having at least one combustion chamber and means for supplying a fuel air mixture into the combustion chamber, said means for supplying a fuel-air mixture comprising:

(a) a fuel injection chamber defining an injection aperture connected with a combustion chamber of said internal combustion engine, said fuel injection chamber further defining an air-intake aperture;

(b) fuel pump means for supplying fuel under pressure;

(c) fuel injector means for controlling the injection of fuel into said fuel injection chamber,

said fuel injector means includes:

(1) a nozzle mounted within said fuel injection chamber, said nozzle being connected to said fuel line;

(2) a pressure sensitive device, said pressure sensitive device being mounted within said fuel injection chamber upstream of said throttle means and including a pressure sensitive diaphragm;

(3) a needle, said needle being movably mounted within said nozzle between positions in which said needle closes and opens said nozzle; and

(4) linkage means for translating movement of said pressure sensitive diaphragm to said needle in which a decrease in pressure sensed by said pressure sensitive device is translated to a movement by said needle tending to open said nozzle;

(d) a fuel line connecting said fuel pump means with said fuel injector means;

(e) throttle means for limiting air flow into the air-intake aperture of said fuel injection chamber, said throttle means being located upstream of the injection of fuel by said fuel injector means into said fuel injection chamber;

(f) air-fuel mixture cooling means for causing heat absorbed by evaporation of fuel within said fuel injection chamber to be primarily taken from the air entering said fuel injection chamber, said air-fuel mixture cooling means including insulation surrounding said fuel injection chamber; and

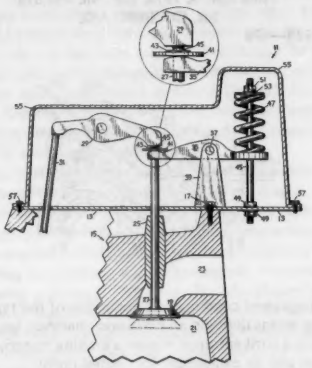
(g) evaporation aid means for causing fuel injected by said fuel injector means to be cooler than the air entering said fuel injection chamber, said evaporation aid means including a portion of said fuel line being wrapped about said fuel injection chamber and within said insulation and downstream of said throttle and fuel injector means.

4,308,828

ADD-ON HEAVY-DUTY VALVE-CLOSING DEVICE FOR HIGH-PERFORMANCE RACING ENGINES

David L. Kinsel, 3350 S. Sixth St., Springfield, Ill. 62703

Filed Mar. 14, 1980, Ser. No. 130,212
Int. Cl.³ F01L *1/30*
U.S. Cl. 123—90.39 **1 Claim**



1. In an internal-combustion engine having: a metal block with a horizontal top surface, a combustion chamber formed in said block, a gas-flow port formed in the top wall of said chamber, a horizontally disposed annular valve seat constituting a rim of said gas-flow port, a valving disk movable to and from closing and opening positions relative to said seat and said port, a vertically disposed valve stem fixed co-axially to said disk and extending upwardly above said top surface of said metal block, a conventional rocker-arm-medially pivotally mounted to and above the top surface of said metal block, a conventional cam-shaft-operable push-rod liftingly engageable under one end of said rocker arm, the other end of said rocker arm being positioned for depressingly engaging the upper end of said valve stem; the improvement in said internal combustion engine, comprising: a rigid base plate overlying and fixed to the top surface of said metal block and having a portion extending horizontally well beyond an edge of said top surface, an upright rocker-arm-supporting stand fixed to said base plate closely adjacent said edge of said top surface, a second rocker arm pivotally mounted on the upper end of said rocker-arm-supporting stand, means liftingly coupling the upper end of said valve stem to one end of said second rocker arm, a very strong and large compression coil spring bearing downwardly against the other end of said second rocker arm which end and coil spring are located horizontally well beyond said edge of said metal block, and adjustable pull-down means for variably compressing said coil spring.

4,308,829

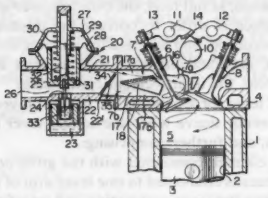
VANE IN THE INLET PASSAGE OF AN INTERNAL COMBUSTION ENGINE

Norimasa Yamada; Yoshihiro Iwashita; Masanori Okada, and Yoshihiro Kanome, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jun. 4, 1979, Ser. No. 45,016
Claims priority, application Japan, Sep. 18, 1978, 53-114221
Int. Cl.³ F02D *9/08*
U.S. Cl. 123—188 M **3 Claims**

1. In an internal combustion engine of the type having a cylinder having a central axis; an inlet valve; a cylinder head closing the top of the cylinder, the cylinder head being formed with an inlet port which is opened and closed by the action of the inlet valve contacting an inlet valve seating surface of the inlet port, and which is of the helical type having a helical

surface leading to the inlet valve seating surface; an inlet passage, defined by a wall leading to the inlet port; and a throttle valve in the inlet passage, the throttle valve being movable between a first position wherein it substantially closes the inlet passage, to a second position wherein it affords a large opening in the inlet passage, and which when it is moved a relatively small amount from the first position affords a small first opening in the inlet passage which is asymmetrically offset towards a particular portion of the wall of the inlet passage; the internal combustion engine being CHARACTERIZED IN THAT



there is further provided: a vane in the inlet passage downstream of the throttle valve, said vane having a concaved leading edge located in proximity to the throttle valve, said leading edge spanning across the inlet passage so as to define a first flow passage having a first flow passage inlet which is aligned with the small first opening defined between the throttle valve and the particular wall portion of the inlet passage, and a second flow passage which is further from the particular wall portion of the inlet passage, said vane having a trailing edge which defines the end of the first flow passage to be disposed substantially at the start of the helical surface.

4,308,830

VANE IN THE INLET PASSAGE OF AN INTERNAL COMBUSTION ENGINE

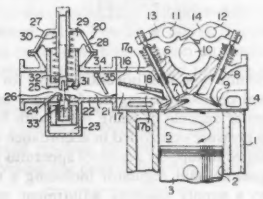
Norimasa Yamada; Yoshihiro Iwashita; Masanori Okada, and Yoshihiro Kanome, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jun. 5, 1979, Ser. No. 45,666

Claims priority, application Japan, Sep. 18, 1978, 53-114220

Int. Cl.³ F02D *9/08*

U.S. Cl. 123—188 M **3 Claims**



1. In an internal combustion engine of the type having a cylinder having a central axis; a cylinder head closing the top of the cylinder, the cylinder head being formed with an inlet port which is offset from the central axis of the cylinder; an inlet passage, defined by a wall, leading to the inlet port; and a throttle valve in the inlet passage, the throttle valve being movable between a first position wherein it substantially closes the inlet passage, to a second position wherein it affords a large opening in the inlet passage, and which when it is moved a relatively small amount from the first position affords a small first opening in the inlet passage which is asymmetrically offset towards a particular portion of the wall of the inlet passage; the internal combustion engine being CHARACTERIZED IN THAT there is further provided: a vane in the inlet passage downstream of the throttle valve, said vane having a concaved leading edge located in proximity to the throttle valve, said leading edge spanning across the inlet passage so as to define a first flow passage having a first flow passage inlet which is aligned with the small first opening defined between the throttle valve and the particular wall portion of the inlet passage, and a second flow passage which is further from the particular wall portion of the inlet passage than said first flow passage, said vane having a trailing edge which defines the end of the first flow passage to be near a portion of the edge of the inlet port which is remote from the central axis of the cylinder.

4,308,831

INTERNAL COMBUSTION ENGINE

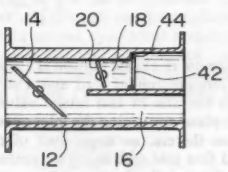
Fukashi Sugasawa, Yokohama, and Haruhiko Iizuka, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 31, 1979, Ser. No. 90,052

Claims priority, application Japan, Dec. 12, 1978, 53-154004

Int. Cl.³ F02D *17/02*

U.S. Cl. 123—198 F **3 Claims**



1. An internal combustion engine comprising:

(a) first and second cylinder units each including at least one cylinder;

(b) an intake passage provided therein with a throttle valve and divided downstream of said throttle valve into first and second branches, said first branch leading to said first cylinder unit, said second branch leading to said second cylinder unit;

(c) an exhaust passage for said first and second cylinder units;

(d) a check valve provided in said intake passage second branch, said check valve being operable in response to a pressure differential between opposite sides thereof for opening only when the pressure on the upstream side thereof is higher than the pressure on the downstream side thereof;

(e) an EGR passage having one end opening into said exhaust passage and another end thereof opening into said intake passage second branch downstream of said check valve;

(f) an EGR valve provided in said EGR passage; and

(g) means, responsive to low engine load conditions, for disabling said second cylinder unit and opening said EGR valve to permit recirculation of exhaust gases into said intake passage second branch.

4,308,832

HELICALLY SHAPED INTAKE PORT OF AN INTERNAL COMBUSTION ENGINE

Takeshi Okumura, Susono, and Hiroshi Ikeda, Mishima, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Sep. 5, 1979, Ser. No. 72,159

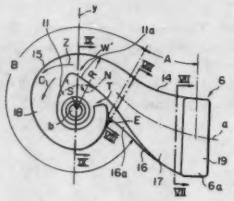
Claims priority, application Japan, Jun. 20, 1979, 54-76698

Int. Cl.³ F02B *31/00*

U.S. Cl. 123—306 **10 Claims**

1. A helically-shaped intake port of an internal combustion engine, which comprises: a helical portion having a outlet open end and an intake valve arranged at said outlet open end, said helical portion being defined by an upper wall and a peripheral side wall which extends circumferentially about an axis of said

intake valve, and an inlet passage portion tangentially connected to said helical portion and having an inlet open end, said inlet passage portion being defined by an upper wall, a bottom wall, a first side wall arranged at a position near the axis of said intake valve, and a second side wall arranged at a position remote from the axis of said intake valve and connected to the peripheral side wall of said helical portion, wherein the first side wall of said inlet passage portion has an inclined wall portion which is arranged to be directed downwards, a projection which extends downwards and is arranged to enclose a valve stem of said intake valve being formed on the upper wall of said helical portion, said projection having a circumferential



wall and a maximum thickness portion at a position near a cross point of said circumferential wall and a straight line which passes through the axis of said intake valve, and extends in parallel with a plane containing the inlet open end of said inlet passage portion therein, an upper half of the inclined wall portion of said first side wall being tangentially connected to the circumferential wall of said maximum thickness portion, wherein the width of the upper wall of said inlet passage portion is gradually reduced towards said maximum thickness portion, and wherein the width of the upper wall of said helical portion is temporarily increased towards a flow direction of a sucked air from said maximum thickness portion and, then, gradually reduced towards the flow direction of the sucked air.

4,308,833

CENTRIFUGAL RPM GOVERNOR FOR FUEL INJECTED INTERNAL COMBUSTION ENGINES

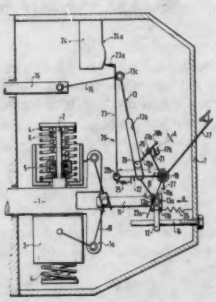
Niro Makino, Kariya, Japan, assignor to Nippondenso Co. Ltd., Kariya, Japan

Filed Sep. 28, 1979, Ser. No. 79,924

Claims priority, application Japan, Oct. 13, 1978, 53-141042[U]

Int. Cl.³ F02D *1/04*

U.S. Cl. 123—368 **6 Claims**



1. In a centrifugal rpm governor for adjusting the fuel quantity control rod of a fuel injection supply pump of an internal combustion engine, said governor including: flyweights displaceable as a function of engine rpm; a governor sleeve connected to the flyweights for displacement as a function of the displacement of the flyweights; an intermediate lever pivotably connected to the governor sleeve, and connectable to the fuel quantity control rod; a setting lever connected to the intermediate lever for arbitrarily adjusting the intermediate lever; a stop cam defining a cam surface, said stop cam determining the full-load fuel quantity; an adaptor lever system having an adaptor lever which includes a cam follower which contacts the cam surface, such adapter lever being coupled by means of a bell crank with the governor sleeve; and a housing to which the stop cam is secured and within which the flyweights, the governor sleeve, the intermediate lever, at least a portion of the setting lever, the stop cam and the adaptor lever system are located, wherein, at full load, the cam follower is guided along the cam surface in order to correct the position of the fuel quantity control rod, and wherein the adaptor lever is disposed opposite the intermediate lever and at least approximately parallel thereto, the improvement comprising:

a back-off lever for separating the adaptor lever system from the governor sleeve when the setting lever is at its idling position, and further comprising:

a transfer element connected with the governor sleeve; and

restoring means connected to one lever arm of the bell crank for biasing the lever arm against the transfer element.

4,308,834

FUEL INJECTION PUMP FOR SUPERCHARGED DIESEL INTERNAL COMBUSTION ENGINES, IN PARTICULAR A DISTRIBUTOR-TYPE INJECTION PUMP

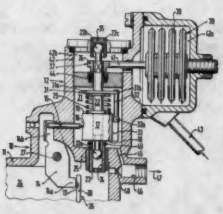
Franz Eheim, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 28, 1979, Ser. No. 80,914

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1978, 2847572

Int. Cl.³ F02D *1/06, 1/14*

U.S. Cl. 123—383 **13 Claims**



1. A distributor-type fuel injection pump for supercharged Diesel internal combustion engines having a housing and an interior chamber capable of being filled with fuel under presupply pump pressure controlled in accordance with rpm, said housing arranged to support a control apparatus and a mechanical rpm regulator, said regulator including a movable lever connected to a supply quantity adjustment member of the injection pump, a full-load stop, the movement of said lever being limited by the position of said full-load stop which determines the maximum permissible full-load supply quantity, said full-load stop being variable by means of a spring urged control member having a cam surface and adjustable by a displaceable charge pressure control element, said control member being associated with said control apparatus and said full-load stop by means of a transmission element which engages the cam surface at said control member, and further wherein said spring urged control member comprises a three-dimensional cam associated with an adjustment shaft and controlled in accordance with rpm and air quantity, said spring including opposite end zones, and said charge pressure control element having a longitudinal extent and further arranged to be displaced relative to an adjustment shaft against said spring by a hydraulically actuated adjustment piston, said adjustment shaft includ-

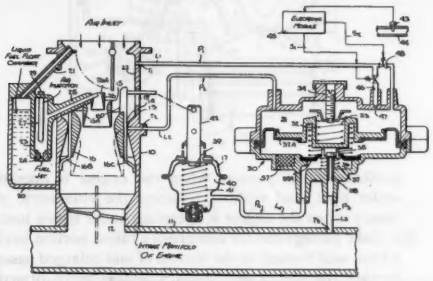
ing opposite end portions, each of which are radially and axially supported by means arranged in said housing, said means arranged in said housing including said adjustment piston and an adjustable member secured to said housing.

4,308,835

CLOSED-LOOP FLUIDIC CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Harold G. Abbey, 11 Goldsmith Dr., Holmdel, N.J. 07733

Continuation-in-part of Ser. No. 115,551, Jan. 25, 1980, Pat. No. 4,250,856, which is a continuation-in-part of Ser. No. 962,883, Nov. 22, 1978, Pat. No. 4,187,805, which is a continuation-in-part of Ser. No. 919,541, Jun. 27, 1978, which is a division of Ser. No. 730,956, Oct. 9, 1976, Pat. No. 4,118,444.
This application Dec. 10, 1980, Ser. No. 214,626
Int. Cl.³ F02M *9/14*
U.S. Cl. 123—439 **15 Claims**



1. A closed-loop fluidic control system for an internal combustion engine having a variable Venturi carburetor whose inlet is coupled to a source of combustion air, fuel being fed into the carburetor to intermingle with the air passing therethrough to produce an air-fuel mixture which is fed into the intake manifold of the engine, said Venturi including an axially-shiftable spool whose position affects flow velocity through the Venturi, said system automatically adjusting the axial position of the spool to produce a ratio of fuel-to-air that is optimum for prevailing conditions of engine speed and load, said system comprising:

A. a vacuum amplifier coupled to the intake manifold and responsive to the existing pressure differential between the inlet and throat of the Venturi to derive from the prevailing vacuum in the manifold vacuum an amplified output vacuum which is a function of said pressure differential; and

B. a bi-directional vacuum motor energized by said amplified output vacuum and operatively linked to the spool to vary the axial position thereof in a direction and to an extent providing the desired fuel-to-air ratio.

4,308,836

MANIFOLD FOR ROTARY ENGINES

Charles E. Wilkinson, 1110 Burleson, Grand Prairie, Tex. 75050

Filed Jun. 18, 1979, Ser. No. 49,643
Int. Cl.³ F02B *53/00*
U.S. Cl. 123—44 D **6 Claims**

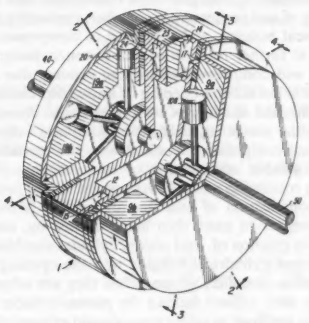
1. A manifold for distributing gases in a rotary piston engine in a manner to reduce withdrawn and reciprocal energy in such engine, such engine including a first and a second cylindrical housing, each cylindrical housing including at least one piston/cylinder combination mounted for rotation within said housing, said two cylindrical housings being located in juxtiposed axial relationship to one another with the axis of each cylinder being substantially a linear extension of the axis of the other cylinder, said manifold including:

means carried by said first cylindrical housing for providing gaseous compression including an intake chamber and a compression chamber;

said intake chamber being substantially arcuate and concentric with the axis of said first cylindrical housing, said intake chamber including a first and a second opening, said first opening being to a source of external gaseous materials are located substantially at one circumferential end of said arcuate intake chamber, said second opening into said intake chamber extending along a substantial portion of the length of said intake chamber, said second opening being to the piston/cylinder combination mounted within said first cylindrical housing;

said compression chamber also being substantially arcuate and concentric with the axis of said first cylindrical housing, said compression chamber including a first and a second opening into said compression chamber, said first opening extending along a substantial portion of the length of said compression chamber and opening to the piston/cylinder combination mounted within said first cylindrical housing, the second opening into said compression chamber being located substantially at one circumferential end of said arcuate chamber and extending substantially axially through said first cylindrical housing and towards said second cylindrical housing;

said intake chamber and said compression chamber being circumferentially displaced from one another along the circumference of said cylindrical housing with the first



opening into said intake chamber being located at the circumferentially greatest distance from the second opening into said compression chamber;

and wherein the piston/cylinder combination within said first cylindrical housing is mounted for rotation in the direction from said first opening in said intake chamber towards said second opening in said compression chamber, said piston/cylinder combination being mounted to move said piston progressively further from said intake chamber and progressively closer to said compression chamber during rotation in such direction;

means carried by said second cylindrical housing for providing power including a compression chamber, a combustion chamber, and an exhaust chamber;

said compression chamber being substantially arcuate and concentric with the axis of said second cylindrical housing, said compression chamber including a first and second opening into said chamber, said first opening being located substantially at one circumferential end of said arcuate chamber and in gas transmitting connection with said second opening of said compression chamber located within said first cylindrical housing, said second opening into said compression chamber extending along a substantial portion of the length of said compression chamber, said compression chamber extending circumferentially in an arc from its first opening in a direction opposite to the direction of the compression chamber within said first cylindrical housing from its second opening circumferen-

tially along the arc of said compression chamber within said first cylindrical housing;

said combustion chamber within said second cylindrical housing being circumferentially spaced from, but serial to, said compression chamber and including a single opening to said piston cylinder combination;

an exhaust chamber circumferentially spaced from, but serial to both said combustion chamber and said compression chamber, said exhaust chamber including a first opening to said piston/cylinder combination and a second opening from said exhaust chamber external to said manifold;

and wherein said piston/cylinder combination within said second cylindrical housing is mounted for rotation in a direction from said first opening of said compression chamber circumferentially along the length of said compression chamber toward said combustion chamber, and thence toward said exhaust chamber, the direction of rotation of said piston/cylinder combination in said second cylindrical housing being opposite to the direction of rotation of the piston/cylinder combination located in said first cylindrical housing, whereby in operation when each piston/cylinder combination is causes to rotate in its preferred opposite direction, and combustible gaseous materials are passed into the first opening of said intake chamber, said gases are drawn into said intake chamber, thence in response to rotation of said piston/cylinder combination out of said second opening of said intake chamber and into the piston/cylinder combination, then, in response to further rotation, said gases are transferred into the first opening of said compression chamber, carried by said first cylindrical housing, and subjected to compression in response to further rotation of said piston/cylinder combination, said compressed gases then passing, due to pressure, from the second opening of said compression chamber to the first opening of the compression chamber carried by the second cylindrical housing and subjected to additional compressive forces due to the rotation of the piston/cylinder combination of said second cylindrical housing rotating in a direction opposite to said piston/cylinder combination of said first cylindrical housing, the thus compressed gases then being carried by, and in response to rotation of, said piston/cylinder combination of said second cylindrical housing into the opening of said combustion chamber, where, when they are subjected to ignition, they expand forcing the piston/cylinder combination to continue to rotate towards said exhaust chamber, the combustion products thence being caused to enter said exhaust chamber through its first opening and allowed to exit the manifold from its second opening.

4,308,837

INTAKE SYSTEM OF AN INTERNAL COMBUSTION ENGINE

Hidetaka Nohira, Mishima; Toshiaki Konomi, and Hideaki Matsui, both of Susono, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Apr. 3, 1979, Ser. No. 26,753

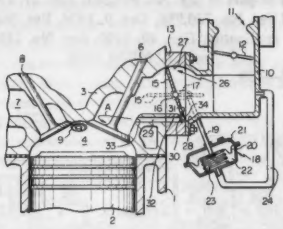
Claims priority, application Japan, May 22, 1978, 53/59895; May 22, 1978, 53/67711[U]

Int. Cl.³ F02M *7/18*

U.S. Cl. 123—442 **7 Claims**

1. An internal combustion engine having a combustion chamber equipped with an intake valve, an intake passage connected to the combustion chamber via the intake valve, a carburetor having a primary throttle valve arranged in said intake passage, a secondary throttle valve arranged in said intake passage at a position downstream of said primary throttle valve, means for opening said secondary throttle valve in accordance with a reduction in the level of vacuum in the portion of said intake passage which is located between said primary throttle valve and said secondary throttle valve, and an auxiliary passage having an outlet opening into the portion of said intake passage located downstream of said secondary throttle valve and an inlet communicating with the portion of said intake passage located upstream of said secondary throttle valve, wherein the improvement comprises:

the cross-sectional area of a portion of the intake passage at the position of the secondary throttle valve is enlarged relative to the cross-sectional areas of the intake passage immediately upstream and immediately downstream of said enlarged passage portion, the amount of enlargement being sufficient to compensate for the flow resistance of said secondary throttle valve when said secondary throttle valve is in the fully open position, whereby the secondary throttle valve can divert the flow of intake gas into the



auxiliary intake passage when the engine is operating under light load without reducing the volumetric efficiency when the engine is operating under heavy load;

the intake passage further comprises a raised portion having a front wall formed on the bottom of said enlarged passage portion, the inlet of said auxiliary passage being formed in the front wall of said raised portion; and

said secondary throttle valve has a cut away portion formed in the periphery thereof in alignment with the inlet of said auxiliary passage when said secondary throttle valve is in its fully closed position.

4,308,838

ACCELERATION SIGNAL DETECTOR

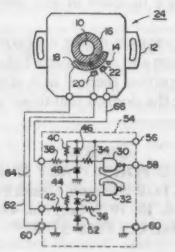
Jiro Nakano, Okazaki; Hironobu Ono, Toyota, and Hideo Miyagi, Okazaki, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Aug. 3, 1979, Ser. No. 63,397

Claims priority, application Japan, Aug. 30, 1978, 53-105819

Int. Cl.³ F02B *3/00*; F02M *51/00*

U.S. Cl. 123—492 **2 Claims**



1. An acceleration signal detector for detecting an acceleration signal of an engine based on the open-and-close action of a throttle valve, comprising:

first means for detecting the fully closed condition of the throttle valve to send out an output, wherein said first means is adapted to detect the range from the mechanically fully closed condition of the throttle shaft to the position of the throttle shaft after it is rotated for several degrees,

second means for detecting the half closed condition of the throttle valve to send out an output, and

signal processing means for detecting an acceleration from a change in the output of said second means subsequent to a change in the output of said first means.

4,308,839

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

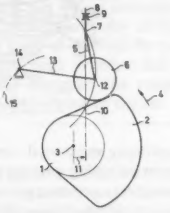
Karl E. Hafner, and Wolfgang Köhler, both of Cologne, Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Mar. 12, 1979, Ser. No. 19,432

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1978, 2810335

Int. Cl.³ F02M *59/10*

U.S. Cl. 123—496 **3 Claims**



1. A fuel injection system including a piston pump for use with an internal combustion engine, the engine having a mechanically operable camshaft which generates fuel injections independent of engine speed, comprising, in combination:

a cam mounted on said camshaft;

a roller in abutment with said cam,

a first link,

first pivot means for pivoting the first link at the axis of the roller;

a piston rod pivoted to the other end of the first link, said piston rod driving the piston of the fuel injection pump and having a line of motion offset slightly from the axis of the camshaft;

a second link for shifting the axis of said roller laterally with respect to line of motion of the piston rod, the axis of the roller being shiftable selectively from one side of the line to the other side of the line by the second link;

second pivot means for pivoting one end of the second link to the roller, said second pivot means being independent of the first pivot means whereby the second link pivots with respect to both the first link and the roller, and

means pivotally attached to the other end of the second lever for moving the other end of the second lever along a first path to move the roller laterally with respect to the line of travel of the piston rod whereby the effective stroke of the piston and velocity of the piston can be varied even though the cam cycles repetitively.

4,308,840

DEVICE FOR PREVENTING EVAPORATIVE FUEL LOSS

Eizi Hiramatsu, Aichi; Yasushi Nakagawa, and Hidenori Sato, both of Nagoya, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Nippon Denso Kabushiki Kaisha, Kariya, both of, Japan

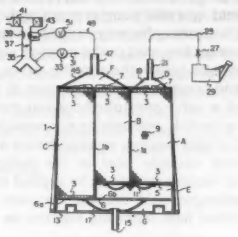
Filed Aug. 31, 1979, Ser. No. 71,769

Claims priority, application Japan, Feb. 9, 1979, 54/13247

Int. Cl.³ F02M *37/00*

U.S. Cl. 123—519 **4 Claims**

1. A device for preventing fuel evaporative loss comprising a casing having an axis and accomodating fuel gas absorbing agents therein, said casing being divided into at least three compartments including at least a first compartment and a last compartment by means of at least two partitions which extend parallel to the axis of said casing, each compartment having absorbing agent layers therein and an inlet and an outlet, a flow-in chamber capable of being communicated with an evaporative fuel source connected to the inlet of said first compartment, an atmospheric chamber solely connected to the outlet



of said last compartment and communicating with the outside of said casing via an atmospheric port, and at least two dispersing chambers, each for communicating the outlet of a compartment with the inlet of an adjacent compartment disposed adjacent to the ends of said compartments, the compartments being serially interconnected with dispersing chambers therebetween for flow of a gas in a serpentine manner.

4,308,841

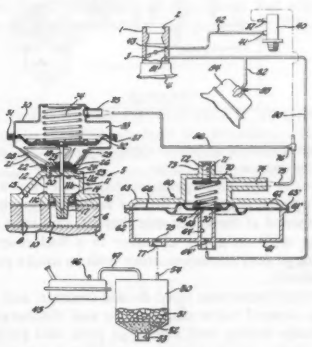
EMISSION CONTROL SYSTEM WITH INTEGRATED EVAPORATIVE CANISTER PURGE

Charles A. Kingsley, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 2, 1977, Ser. No. 764,866

Int. Cl.³ F02M *37/02*

U.S. Cl. 123—520 **4 Claims**



1. A canister purge system for use as part of an emission control system for a vehicle having a canister receiving fuel vapor from a fuel reservoir used to supply fuel to an internal combustion engine, the engine having an induction passage with flow therethrough controlled by a throttle valve, the induction passage having a ported vacuum port therein traversed by the throttle valve and an induction vacuum port located below the throttle valve, said canister purge system including a purge valve having a housing including a base and a cover member, a diaphragm secured between said base and said cover member and defining a chamber with said cover on one side of said diaphragm and defining with said said base a compartment on the other side of said diaphragm, said base having an upstanding boss projecting into said compartment and defining at one end thereof a valve seat, an outlet passage,

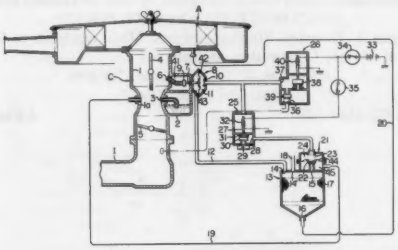
with an orifice restriction of predetermined size therein, in said base extending through said boss whereby said valve seat encircles said outlet passage, said valve seat being positioned to be engaged by said diaphragm to block flow through said outlet passage from said compartment, spring means positioned in said chamber for normally biasing said diaphragm into engagement with said valve seat, said base having a vapor inlet passage, with a purge orifice of predetermined size therein, opening at one end into said compartment and connectable at its other end to the canister for receiving fuel vapor therefrom, conduit means connecting said outlet passage with the port in the induction passage below the throttle valve, vacuum passage means in said cover in communication at one end with said chamber and, a valve controlled conduit means, including a thermal vacuum switch, operatively connected at one end to the opposite end of said vacuum passage means and at its other end to the ported vacuum port in the induction passage whereby a ported vaccum signal can be applied to the chamber side of said diaphragm, said thermal vacuum switch being positioned in thermal heat receiving relation on the engine.

4,308,842

EVAPORATIVE EMISSION CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Masao Watanabe, Niiza; Osamu Goto, Higashikurume, and Yasuji Uozumi, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 28, 1979, Ser. No. 80,780
Claims priority, application Japan, Oct. 2, 1978, 53/135655
Int. Cl.[3] F02M *59/00*
U.S. Cl. 123—520 **6 Claims**



1. An evaporative emission control system for an internal combustion engine, comprising:

a fuel vapor storage canister having an inlet and a discharge port opened at one side thereof and an atmospheric opening opened at the other side thereof, said inlet communicating with an upper chamber in a fuel reservoir, said discharge port communicating with an intake passage of a carburetor;

a fuel vapor adsorbent filled in said canister; and

a purge control valve disposed on said discharge port for normally closing said discharge port, said purge control valve being adapted to be opened when a temperature of the engine exceeds a predetermined level during operation of the engine;

said purge control valve comprising:

a valve body disposed on said discharge port;

spring means for urging said valve body towards a closing relation to said discharge port;

a vacuum chamber communicating with an intake passage of the engine through an electromagnetic valve and a vacuum signal valve for opening said valve body against said spring means when vacuum pressure enters;

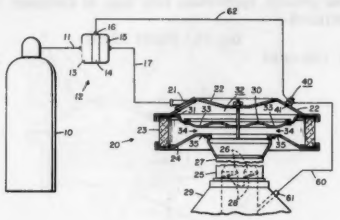
said electromagnetic valve having an atmospheric opening, an inlet in communication with said vacuum signal valve, and an outlet in communication with said vacuum chamber, said inlet and said atmospheric opening of said electromagnetic valve being alternately opened and closed for bringing said outlet of said electromagnetic valve into selective communication with said inlet and said atmospheric opening thereof.

4,308,843

SLOW-RUN SYSTEM AND APPARATUS FOR GASEOUS FUELED INTERNAL COMBUSTION ENGINES

Keith H. Garretson, Mt. Pleasant, Iowa, assignor to Garretson Equipment Co., Inc., Mt. Pleasant, Iowa

Filed Oct. 4, 1979, Ser. No. 81,843
Int. Cl.[3] F02M *21/04*
U.S. Cl. 123—525 **15 Claims**



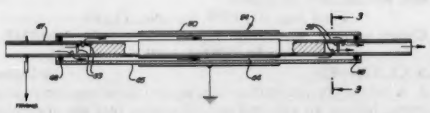
1. In a system for operating an internal combustion engine on gaseous fuel, the system including gaseous fuel supply means, primary regulator means, zero pressure governor means and an arrangement for slow-run of the engine, the engine including an engine air supply passage having throttle means therein for varying the supply of mixed gaseous fuel and air to the engine, the primary regulator supplying gaseous fuel to the zero pressure governor at a pressure above that in the engine air supply passage and the zero pressure governor supplying gaseous fuel through first communicating means to the engine air supply passage upstream of said throttle means, wherein the slow-run arrangement comprises: valve means having an inlet and an outlet, the valve inlet receiving gaseous fuel at said pressure from the primary regulator through second communicating means, and the engine air supply passage above said throttle means receiving gaseous fuel from the valve outlet through third communicating means independent of the zero pressure governor and the first communicating means effective to prevent gaseous fuel pressure in the third communicating means from influencing operation of the zero pressure governor; control means responsive to operation of the engine effective to close the valve means when the engine is not operating and to open the valve means for supply therefrom of gaseous fuel to said air supply passage when the engine is operating; and adjusting means for varying the quantity of gaseous fuel delivered through the third communicating means to said air supply passage when the valve means is open as aforesaid.

4,308,844

METHOD AND APPARATUS FOR IMPROVING EFFICIENCY IN COMBUSTION ENGINES

James G. Persinger, 910 S. Harrison, Hugoton, Kans. 67951

Filed Jun. 8, 1979, Ser. No. 46,754
Int. Cl.[3] F02B *51/04*
U.S. Cl. 123—539 **8 Claims**



1. An apparatus for improving efficiency of a combustion

engine by ionization of an air supply to the engine, the apparatus comprising:

inlet means for receiving the air supply to the combustion engine;

means for ionizing the air supply to produce ozone gas and to produce a positively charged air and ozone gas mixture in an amount effective to improve engine efficiency;

said means for ionizing the air supply comprising in combination: a first inner cylinder composed of an electrically conductive material, a second intermediate cylinder composed of a dielectric material, and a third outer cylinder composed of an electrically conductive material, each cylinder being longitudinally aligned with one another in a concentric arrangement and to provide a cylindrical gap for directing the flow of air supply between an exterior surface of said first inner cylinder and an interior surface of said second intermediate cylinder;

means for directing the flow of air supply received in an interior portion of one end of said first inner cylinder to said cylindrical gap where ionization of the air supply is effected and subsequently for directing the gaseous ionized mixture back to the interior portion of an opposite end of said first inner cylinder; and

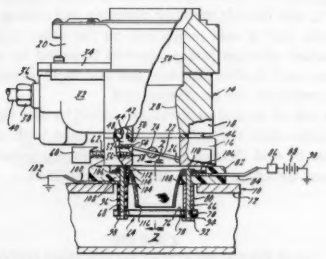
outlet means for directing the resultant gaseous ionized mixture to said combustion engine.

4,308,845

EARLY FUEL EVAPORATION WITH BYPASS

Jorma O. Sarto, Orchard Lake, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Oct. 22, 1979, Ser. No. 87,278
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—549 **3 Claims**



1. An improved air fuel delivery system for a vehicle engine which includes a flow heater and a flow directing means therefor to provide a substantially uninhibited flow of the air fuel mixture over a wide range of engine speeds to accommodate both idle and wide open throttle operations of the vehicle engine, comprising:

an intake manifold having a single inlet aperture to receive the air flow mixture at varying flow rates ranging from a very low rate at idle to a maximum rate at wide open throttle;

the heater being dimensionally thin and flat with a plurality of small apertures extending therethrough which apertures are aligned with the flow through the single intake aperture of the manifold;

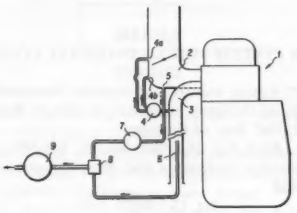
support means for the heater spacing the plurality of apertures therein downwardly from the single inlet aperture of the manifold to therefor define a bypass area with respect to the heater to permit an alternate and laterally directed flow of the air/fuel mixture with respect to the single inlet aperture and the heater when the engine requires a relatively large flow rate, whereby relatively heavy fuel droplets in the air/mixture are carried by inertia to the heater for subsequent heating and then flow through the apertures while simultaneously the lighter portion of the air/fuel mixture may flow in the lateral direction bypassing the heater which occurs particularly during off-idle modes of engine operation when flow rates are relatively great.

4,308,846

METHOD FOR MEASURING THE RATE OF RECIRCULATION OF EXHAUST GASES IN AN INTERNAL COMBUSTION ENGINE AND DEVICE FOR PUTTING SAID METHOD INTO PRACTICE

Pierre Cochard, Saint-Vrain, and Bruno de Saint-Marie, Chatenay-Malabry, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Jan. 24, 1980, Ser. No. 115,060
Claims priority, application France, Feb. 1, 1979, 79 02650
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—568 **4 Claims**



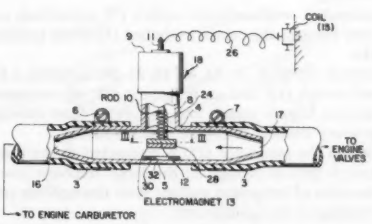
2. An apparatus for measuring the rate of recirculation of exhaust gas in an internal combustion engine having an intake collector including means for injecting recycled gas, comprising means for drawing off intake gases from the intake collector at a point in said intake collector located downstream from the point of injection of said recycled gases into said intake collector, and means for drawing off exhaust gases, each of said means for drawing off being connected to a selection means for transferring each of said intake and exhaust gases thus drawn off to a device for analyzing their CO_2 concentration.

4,308,847

COMBUSTION DEVICE FOR IC ENGINE

Gladio Ruizzo, Jr., 200 Windmill St., Providence, R.I. 02904

Continuation-in-part of Ser. No. 863,787, Dec. 23, 1977, abandoned. This application Nov. 23, 1979, Ser. No. 96,999
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—573 **6 Claims**



1. An improved combustion and anti-pollution device for disposition within a gaseous material loop connecting the crankcase and carburetor of an IC engine, said loop including a generally flexible hollow tube, said device comprising, a substantially T-shaped body having opposed head ends, said body interposed in said tube and positioned substantially coaxially with said tube, a stem extending substantially perpendicularly from said body and projecting out of said tube, said stem being closed at a free end thereof, an electrically conductive

rod coaxially positioned in said stem and having opposite first and second ends, the first end of the rod extending through said closed free end of said stem, a disc-shaped electromagnet affixed to the second end of the rod and positioned perpendicularly to said rod and having a diameter thereof coaxial with the head of said body, a disc-shaped permanent magnet in turn attached to said electromagnet at the lower face thereof, an annular ring of magnetizable material positioned in said body between the head ends thereof and positioned in spaced opposition to the lowermost face of said permanent magnet, means for causing a flow of combustion gases in said tube whereby said gases pass through the space between said ring and said magnets, and electrical energy means electrically connected to the first end of the rod outside the body for supplying alternating electrical energy thereto thereby producing a magnetic field in said body for energizing gaseous molecules passing therethrough.

4,308,848

IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

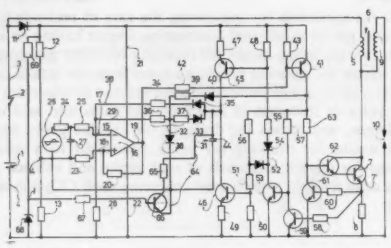
Georg Pfaff, Asperg, and Helmut Schmied, Remshalden, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 16, 1980, Ser. No. 140,680

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1979, 2915938

Int. Cl.³ F02P *1/08*

U.S. Cl. 123—618 **5 Claims**



1. Ignition system for an externally fired internal combustion engine, having

a current supply circuit (**1, 3, 4, 11**) adapted for connection to a source (**1**) of current supply;

an ignition coil (**6**) having a primary (**5**) and a secondary (**9**) winding;

a controlled semiconductor switch (**7**) controlling current flow through the primary winding (**5**) of the ignition coil (**6**);

a control circuit (**8, 59, 53, 45; 15, 31–38**) including a threshold switch (**15**) and an integrator (**31, 44**) responsive to ignition trigger signals and to current flow through the primary winding (**5**) of the ignition coil,

in which the integrator (**31**) is connected to the threshold switch (**15**) to change its threshold response level as a function of integrated current flow through the primary winding of the ignition coil,

and comprising, in accordance with the invention,

a safety circuit to prevent change of the response level of the threshold switch under control of the integrator under certain low supply voltage conditions which is characterized by

a variable resistance circuit (**64**) connected across the integrator and further connected to be responsive to the voltage level of the current supply circuit, the resistance of said variable resistance circuit decreasing with decreasing voltage across said current supply circuit.

4,308,849

PROJECTILE LAUNCHER

Daniel Seregely, P.O. Box 2021, Santa Monica, Calif. 90406

Filed May 12, 1980, Ser. No. 148,702

Int. Cl.³ F41B *3/04*

U.S. Cl. 124—5 **4 Claims**

1. A projectile launcher comprising:

(a) an elongated rigid member having a handle portion on one end adapted for gripping and an outward projection normal to the longitudinal axis of said member adjacent the opposite end thereof;

(b) a resiliently flexible flexible member connected to said rigid member adjacent said handle portion to one end to be disposed close adjacent and parallel to said rigid member, said flexible member covering and resting against the outer end of said projection on the other end to form a pocket adjacent said projection bounded by said projection, said flexible member, and said rigid member wherein a projectile can be placed; and,

(c) a pair of second projections carried by said rigid member intermediate the ends thereof disposed with one on each side of said flexible member and facing generally in the same direction as said outward projection.

4,308,850

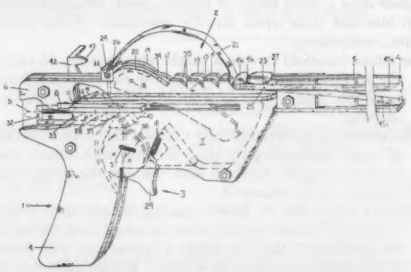
MULTIPLE ELASTIC BAND PROJECTOR

James P. Hunter, Rte. 7, Box 255E, Denham Springs, La. 70726

Filed May 25, 1979, Ser. No. 42,519

Int. Cl.³ F41B *7/02*

U.S. Cl. 124—19 **5 Claims**



1. An elastic band projector comprising:

(a) a gun stock housing assembly;

(b) an elastic band loading assembly attached to said gun stock housing assembly, said elastic band loading assembly

comprising parallel plates having notches aligned with one another; and

(c) a firing assembly attached to said gun stock housing assembly, said firing assembly comprising:

(i) a firing arm pivotly attached to said elastic band loading assembly at a position to swing between said parallel notched plates,

(ii) an elongated ratcheted lever means slideably positioned between parallel notched plates, attached to said gun stock housing assembly and moveable to contact and pivot said firing arm to strip successive elastic bands from the stock as said ratcheted lever is slid forwardly in said gun stock housing assembly,

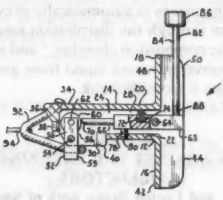
(iii) a trigger means pivotly attached to said gun stock housing assembly and including a trigger finger, said trigger means comprising a ratchet engaging finger attached to said trigger finger and having an upper end that engages teeth of said ratchet to cause movement of said ratchet when said trigger means is pivoted by a user, and said trigger finger extending out of said gun stock housing assembly.

4,308,851

BOWSTRING DRAW AND TRIGGER RELEASE APPARATUS

Albert A. Kaine, Jr., 9818 Cedar, Overland Park, Kans. 66207, and David L. Mabry, 8612 E. 9th St., Kansas City, Mo. 64125

Filed Oct. 22, 1979, Ser. No. 87,222
Int. Cl.³ F41B *5/00*
U.S. Cl. 124—35 A **6 Claims**



1. A bowstring draw and trigger release mechanism comprising:

a body adapted to be held in the hand;

a holding member mounted on said body for pivotal movement between first and second positions for holding and releasing a bowstring, respectively, said holding member having opposite ends which move through an arc of substantially 90° between the first and second positions;

a linkage member having a generally flat end;

a roller mounted for rotation on one end of said holding member and carried therewith through said 90° arc between the first and second positions, the opposite end of said holding member projecting out of said body;

means for mounting said linkage member on said body for pivotal movement between a hold position wherein said flat end of the linkage member engages said roller in a manner to retain said holding member in the first position thereof, and a release position wherein said flat end of the linkage member is disengaged from the roller to permit movement of said holding member to the second position thereof for release of the bowstring; and

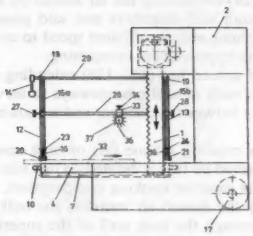
yieldable means for biasing said linkage member toward the hold position thereof.

4,308,852

APPARATUS FOR SAWING DIFFERENT MATERIALS

Siegfried Gebhart, Tobelstadel, 7971 Aichstetten, Fed. Rep. of Germany

Filed Jun. 19, 1980, Ser. No. 161,102
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1979, 2925600; Jun. 23, 1979, 2925401; Oct. 26, 1979, 2943299
Int. Cl.³ B28D *1/04*
U.S. Cl. 125—16 R **23 Claims**



1. In apparatus for sawing different kinds of materials, the improvement comprising in combination:

a supporting frame including a girder-type construction defining an opening for the feedthrough of materials to be cut in longitudinal direction by a saw blade;

a supporting platform for materials to be cut including a carriage displaceable in longitudinal direction;

a clamping arrangement for materials to be cut on the carriage;

supporting bracket means positioned laterally of the saw blade in front and back regions of the frame and mounted on said carriage;

an upper and lower cross-beam for each supporting bracket, with each lower cross-beam being arranged at a distance from the carriage platform; and

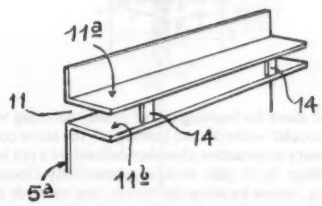
vertically movable rods arranged between the upper and lower cross-beams and carrying a clamping device for materials to be cut.

4,308,853

FORCED HOT AIR ALIMENTARY OVEN

Rodger Thirode, 26 rue Erlanger, 75016 Paris, France

Filed Jan. 31, 1980, Ser. No. 117,085
Claims priority, application France, Feb. 15, 1979, 79 03824
Int. Cl.³ A21B *1/00*
U.S. Cl. 126—21 A **4 Claims**



1. A forced, hot air alimentary oven adapted to cook food products containing components with different moisture contents, such oven comprising:

(a) an insulated housing (1),

(b) heating means (3) for elevating the temperature of the air within the housing,

(c) vertically extending chambers (7,8) situated at opposite sides of said housing,

(d) a plurality of parallel, superposed cooking compartments

(5) extending horizontally across said housing between said chambers,

(e) each cooking compartment comprising a pair of spaced sidewalls (*5a, 5b*) and a base wall (**9** or **10**) extending horizontally between said sidewalls to define an upwardly opening compartment, said base wall being adapted to receive thereon food products to be cooked,

(f) a plurality of passageways for communicating with said chambers, each passageway extending horizontally across the open upon end of a cooking compartment,

(g) means (**2**, *2a*) for forcing the air heated by said heating means through said chambers and said passageways in sufficient volume and at sufficient speed to cook the food products, the improvement comprising:

(1) a pair of spaced lips (*11a, 11b*) extending a short distance into each of said passageways to serve as an entranceway between a chamber and a cooking compartment,

(2) said lips creating a zone (A) of high speed, laminar flow of heated air that is defined on one side by the base wall of the superior cooking compartment,

(3) whereby the heated air transfers the bulk of its heat energy through the base wall of the superior cooking compartment to the bottom of the food products received thereon and the lower cooking compartment receives only the lesser amount of heat energy present in the secondary air currents (zone B) that break away from the zone of high speed, laminar flow of heated air.

4,308,854

OIL STOVE FOR BURNING WASTE OIL AND NORMAL HEATING OIL

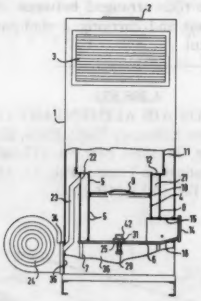
Walter Kroll, 42 Burgstaller Strasse, 7141 Kirchberg/Murr, Fed. Rep. of Germany

Filed Jul. 5, 1979, Ser. No. 54,954

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1978, 2832389

Int. Cl.[3] **F24C** *5/00, 1/00*

U.S. Cl. 126—93 **6 Claims**



1. An oil stove for burning oils of widely differing viscosities and in particular waste oil and heating oil, the stove comprising a first primary combustion chamber defined by a pot having air inlet openings in its side wall, a substantially closed base, a burner ring, means locating the burner ring towards the upper end of said pot, said pot being surrounded by a closed jacket spaced from said side wall to define a space therebetween, a secondary combustion chamber adjoining and of larger diameter than said pot, an oil supply tank, an oil line leading from said oil supply tank into said pot, a fan, first duct means for supplying combustion air to said space from said fan, and second duct means arranged to blow a stream of cold air from said fan across the underside of said substantially closed base to cool the same irrespective of the viscosity of the oil being burned; there being wall means of said stove defining a flow passage for subsequently guiding said stream of cold air past said closed jacket and said secondary combustion chamber, whereby to warm said air for heating purposes without said air coming into contact with gases formed by combustion of said oil.

4,308,855

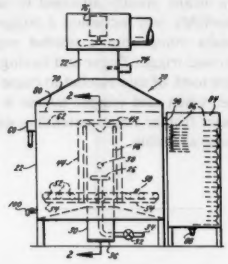
SUBMERGED BURNER FURNACE

Joseph M. Schallert, 11737 Old St. Charles Rd., Bridgeton, Mo. 63044

Filed Nov. 3, 1976, Ser. No. 738,436

Int. Cl.[3] **F24H** *1/20*

U.S. Cl. 126—360 A **10 Claims**



1. A direct contact liquid-gas heater having a tank to contain a liquid medium, means to maintain the liquid medium at a desired level in the tank, a combustion chamber enclosing a burner submerged in the liquid medium, plenum means communicating with the combustion chamber to direct the flow of gases produced by the burner to a distribution means, the distribution means having means to break the gas into streams of bubbles and release them into the liquid medium, "the tank having cooperating means to automatically prevent sumping of the liquid medium through the distribution means and plenum means to reach the combustion chamber," and means in the top of the tank to remove entrained liquid from gas as an exhausting means exhausts it from the tank.

4,308,856

PROTECTION AGAINST THE FREEZING OF SOLAR COLLECTORS

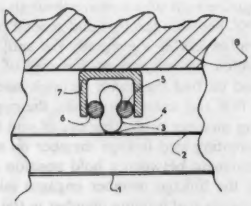
Francois Durand, and Lucien Besse, both of Septemes Les Vallons, France, assignors to S.A. Lipsudest, Septemes Les Vallons, France

Filed May 23, 1979, Ser. No. 41,750

Claims priority, application France, May 25, 1978, 78 16350

Int. Cl.[3] **F24J** *3/02;* **E03B** *7/10*

U.S. Cl. 126—418 **1 Claim**



1. A solar heat collector, comprising a transparent cover and a metal fin beneath the cover, a tube secured to the fin in heat exchange relation therewith, the tube having a figure eight cross section and being secured to the fin at one end of the major axis of the figure eight along the length of the tube, a

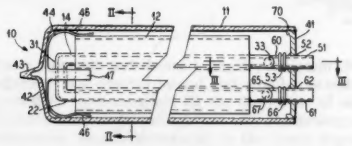
spring clip that presses the midportions of opposite sides of the tube together in a direction perpendicular to said major axis over the length of the tube, and metal bars disposed between the spring clip and the tube in the indentations on opposite sides of the tube that result from the figure eight cross section of the tube, said bars transmitting the compressive effect of the spring clip to the tube, said bars being round in cross-sectional configuration and said spring clip being of U-shaped cross-sectional configuration.

4,308,857

EVACUATED ENVELOPE AND SOLAR ENERGY RECEIVER

William H. Sims, Cedar Falls, Iowa, assignor to Chamberlain Manufacturing Corporation, Elmhurst, Ill.

Filed Sep. 20, 1979, Ser. No. 77,352
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—443 **15 Claims**



1. A solar energy collector comprising, an envelope transparent to solar radiation, a body member of high thermal conductivity mounted in said envelope and formed with a plurality of openings, a plurality of metal tubes extending through said plurality of openings in said body member and the outer walls of said tubes in tight physical contact with the walls within said openings of said body member, input and output conduits passing through said envelope and sealed thereto and connected to said tubes for supplying to and removing fluid from said collector, and other tubes interconnecting said plurality of tubes to form a fluid sealed path between said input and output conduits.

4,308,858

SOLAR ENERGY COLLECTING APPARATUS AND METHODS

Dale N. Skillman, P.O. Box 1311, Rapid City, S. Dak. 57709

Filed Oct. 29, 1979, Ser. No. 89,100
Int. Cl.³ F24J *3/00*
U.S. Cl. 126—450 **30 Claims**

1. In solar energy collecting apparatus on a support structure, the combination comprising:

a plurality of solar collector members connected side by side, each solar collector member having:

a collector panel including an intermediate portion providing a solar collector plate with an absorber surface and a pair of opposed sidewall portions projecting up from the opposite side edges of said intermediate portion;

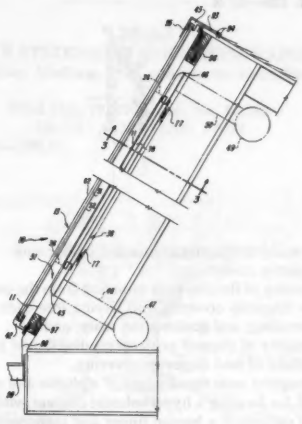
a solar energy transmission cover coupled to support said sidewall portions above said intermediate portion to provide an air space between said cover and said solar collector plate;

a bottom panel including an intermediate portion extending under said collector plate and a pair of opposed sidewall portions projecting up from the opposite side edges of said bottom panel intermediate portion, said bottom panel sidewall portions being fastened to said collector panel to form an airflow passage below said collector plate,

said collector panel, cover, and bottom panel of each collector member being a complete solar energy collecting entity independent of the collector panels, covers, and bottom panels of adjacent collector members,

the upper side edge portions of one collector panel being joined to the upper side edge portions of adjacent collector panels of adjacent collector members to form an imperforate weather membrane to protect the support structure from the weather in the absence of a complete cover for said one collector panel; and

mounting means between each collector member and support structure for holding said solar collector members against vertical and lateral movement relative to said support structure while leaving said collector members free for longitudinal movement relative to said support structure to permit said collector members to thermally expand and contract along their length due to temperature changes.

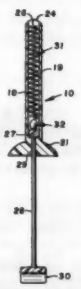


4,308,859

METHOD OF INHIBITING MASTITIS IN BOVINE ANIMALS

Francis W. Child, Eagle Bend, Minn., assignor to Child Laboratories Inc., Eagle Bend, Minn.

Filed Aug. 1, 1979, Ser. No. 62,707
Int. Cl.³ A61B *19/00*
U.S. Cl. 128—1 R **4 Claims**



1. A method of inhibiting mastitis in the udder and teat canal of a bovine animal comprising: locating metallic silver in the udder of a bovine animal, leaving said metallic silver in said udder whereby silver ions originating from said metallic silver provide micro-organism control with the udder, and introducing a sulphur compound into said udder, said sulphur compound reacting with said metallic silver to produce anti-bacterial and anti-virus substances.

4,308,860

SCALP MASSAGING IMPLEMENT

Estelle W. Sanders, 1815 Sudbury Rd., NW., Washington, D.C. 20012, and Lawrence J. Goffney, Jr., 651 E. Jefferson Ave., Detroit, Mich. 48226

Filed Jun. 8, 1979, Ser. No. 47,265
Int. Cl.[3] A61H *7/00*
U.S. Cl. 128—62 R **3 Claims**

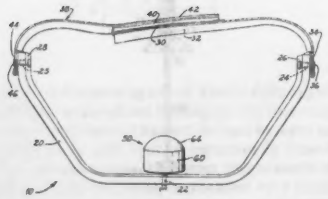
1. A scalp massaging implement comprising:
a fingertip covering;
a plurality of flexible tines radiating from the outer surface of the fingertip covering and having free ends for pinching, spreading, and quaking the scalp; and
a plurality of cupped projections distributed over the inner surface of said fingertip covering,
said cupped ends constructed of a pliable and resilient material for forming a hyperboloidal contact with the cylindrical surface of a human finger and constructed in renitent thickness to seal said cupped ends in suctorial hyperboloidal contact to said finger.

4,308,861

PHARYNGEAL-ESOPHAEGEAL SEGMENT PRESSURE PROSTHESIS

Dan H. Kelly, Houston, Tex., assignor to Board of Regents, University of Texas, Austin, Tex.

Filed Mar. 27, 1980, Ser. No. 134,448
Int. Cl.[3] A61F *5/00*
U.S. Cl. 128—68 **7 Claims**



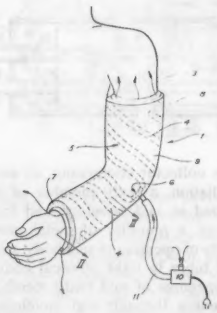
1. A pharyngeal-esophageal segment pressure prosthesis for providing pressure to a weakened pharyngeal-esophageal segment area of the neck of a laryngectomized person comprising, in combination:
a rigid support band having substantially a U-shaped configuration;
a pad assembly having a substantially curvilinear exterior surface for providing diffuse pressure application to the weakened pharyngeal-esophageal segment area of the laryngectomized person, whereby the pressure provided establishes a degree of integrity for the segment area sufficient to permit resonance vibration of the segment area to effect esophageal speech, the pad assembly pivotably and rotatably mounted to the support band; and
a flexible strap mechanism for securing the prosthesis around the neck, the ends of the strap coupled to the free ends of the support band.

4,308,862

PLASTER CAST

Irene Kalmar, 49 Young St., Sylvania, New South Wales 2224, Australia

Filed Feb. 6, 1980, Ser. No. 119,234
Claims priority, application Australia, Feb. 14, 1979, PD7675
Int. Cl.[3] A61F *13/04*
U.S. Cl. 128—91 R **4 Claims**



1. A support shaped such that when positioned on a limb of the wearer of said support, said support will surround and immobilise said limb, said support comprising a layer of flexible air permeable material adapted to lie immediately adjacent to, and surround, said limb; a substantially rigid casing have two ends and enveloping said layer; a substantially T-shaped pipe positioned between said layer and said casing with the stem of said pipe protruding through said casing approximately equidistant from said ends; two lengths of flexible plastics tubing located between said layer and said casing and each having one end thereof joined to a corresponding end of the cross position of said pipe, both said lengths of tubing being helically wound over said layer so as to extend in opposite directions away from said T-shaped pipe, said tubing having a substantially flat surface abutting said layer and a plurality of spaced apertures extending through said flat surface; and an air pump adapted to be coupled to said stem whereby said layer, pipe and tubing are maintained in position by said casing and said pump permits air to be forced into said air permeable material via said tubing, said air evaporating perspiration and leaving said support at said ends of said casing.

4,308,863

EXTERNAL FIXATION DEVICE

David A. Fischer, Minneapolis, Minn., assignor to Ace Orthopedic Manufacturing, Inc., Los Angeles, Calif.

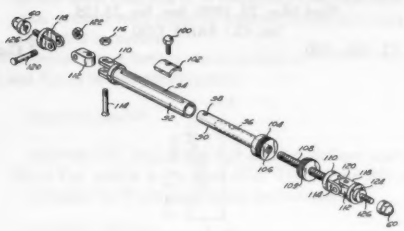
Filed Oct. 18, 1979, Ser. No. 85,996
Int. Cl.[3] A61F *5/04*; A61B *17/18*
U.S. Cl. 128—92 A **5 Claims**

1. An external fixation device for immobilizing a bone fracture from a location external to the soft tissue of a user patient comprising:
first and second substantially planar frame segments, each frame segment positioned approximate to said soft tissue and disposed on each side of the bone fracture;
plural pins extending through the soft tissue and anchored to

the bone, the pins arranged in a first group disposed on one side of the bone fracture and a second group disposed on the other side of the bone fracture;

plural pin holder means for independently clamping each of the pins in the first group to the first frame segment and the pins in the second group to the second frame segment;

lockable adjustment rods interconnecting the frame segments to permit, when desired, relative movement of the



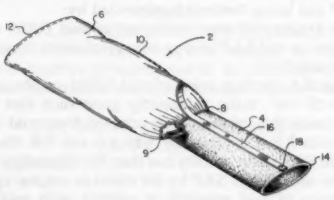
frame segments and means to rigidly maintain the frame segments in a desired lateral and angular orientation to accurately reposition and fix the fragments of said bone fracture, the lockable adjustment rods comprising a pair of telescoping members mounted to the frame segments by means providing a lockable clevis and trunion joint, and including means for providing rapid length adjustment of said telescoping members and for providing small increment length adjustment for said tubular members.

4,308,864

SURGICAL EXTREMITY DRAPE

Martin H. Small, 4132 Calculus Rd., Dallas, Tex. 75234; Janeece J. Davis, 3804 Shady Creek Dr., Garland, Tex. 75042, and Peggy C. Elkins, 2133 McDaniel Cir., Plano, Tex. 75075

Filed Feb. 9, 1979, Ser. No. 10,892
Int. Cl.[3] A61F *13/00*
U.S. Cl. 128—132 D **4 Claims**



1. In a surgical drape of the type covering an extremity of a patient during surgery on said extremity, the improvement wherein said drape comprises:

a first section comprising an elongated stockinette tube open at both ends, said tube, when said drape is in place completely covering a surgical site on said extremity, being disposed around said extremity at said surgical site and closely fitted to the shape of and in engagement with said extremity to resist movement relative to said extremity at said surgical site;

a second section completely covering the part of said extremity distal from said surgical site to form a substantially fluid impervious sterile barrier, said second section comprising an elongated tube of liquid proof film having an interior tube of fabric, and second section being closed at one end and being secured at its other end to one end of said first section;

said first section being in a toroidal roll, said stockinette having been rolled circumferentially outward from the end opposite said second section until said roll has approached said second section; and

at least one elongated strap extending substantially the length of said first section, positioned on the outer wall of said first section and concentrically rolled within said toroidal roll;

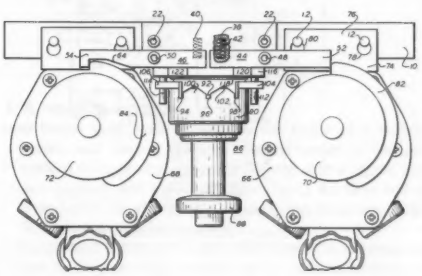
whereby said elongated strap provides means to unroll said toroidally rolled first section so as to completely cover said surgical site on said extremity.

4,308,865

INTERLOCK SYSTEM FOR ANESTHETIC VAPORIZERS

Wayne W. Hay, Madison, Wis., assignor to Airco, Inc., Montvale, N.J.

Filed Oct. 19, 1979, Ser. No. 86,386
Int. Cl.[3] A61M *11/00, 17/00*
U.S. Cl. 128—200.14 **3 Claims**



1. An anesthesia machine having an interlock system, said anesthesia machine comprising a manifold, first and second anesthetic vaporizers mounted on said manifold, each of the vaporizers including control means rotatable to open and closed positions, a selector valve mounted on said manifold intermediate the first and second vaporizers, said selector valve having first and second extreme position wherein said first and second vaporizers, respectively, are operable, and said selector valve having a middle position wherein neither of said first and second vaporizers is operable, said interlock system mounted on said manifold and comprising means to prevent rotation of said control means toward the open position of the first vaporizer when said selector valve is in said second extreme position, and to prevent rotation of said control means toward the open position of said second vaporizer when said selector valve is in said first position and to prevent rotation of both control means of said first and second vaporizers toward the open positions when said selector valve is in said middle position.

4,308,866

INFUSION CONTROLLING APPARATUS AND METHOD

Roger W. Jelliffe, Pasadena, and Jack D. Crone, Sunland, both of Calif., assignors to University of Southern California, Los Angeles, Calif.

Filed Nov. 2, 1978, Ser. No. 957,258
Int. Cl.[3] A61M *5/00*
U.S. Cl. 128—214 E **24 Claims**

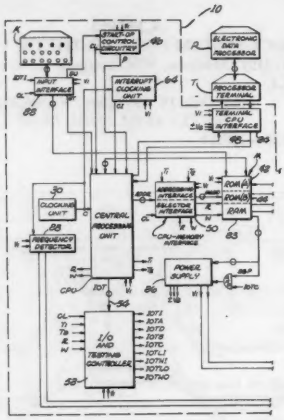
1. Portable medical apparatus for controlling the flow rate of a fluid for medically treating a patient according to fluid flow rate information available from an individual, and from a source electronic data processor, the available flow rate information representing sequences of flow rates and their durations, comprising:

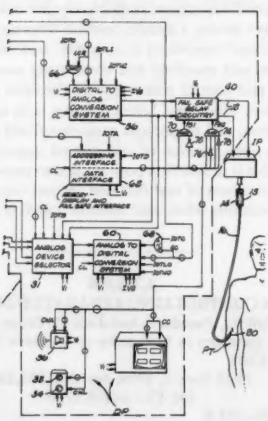
operator input means for coupling to the individual to receive flow rate information provided by the individual and provide electrical signals representative of said information;

source processor input means for coupling to the source electronic data processor to receive flow rate information

provided by the source processor and provide electrical signals representative of said information; and

electronic data processing means for coupling to said operator input means and to said source processor input means to receive said electrical signals, provide and store storage signals representative of said received electrical signals





and provide flow rate output signals, representative of said storage signals, for regulating the flow rate of the fluid;

said electronic data processing means including means for coupling to infusion regulator means for regulating the flow rate of the fluid in response to said output signals.

4,308,867

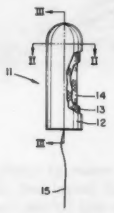
TWO-MEMBER MEDICATED DEVICE FOR RATE-CONTROLLED ADMINISTRATION OF LIPOPHILIC PHARMACEUTICALS

Theodore J. Roseman, 5313 Rugby St., Portage, Mich. 49008; Osmer S. Carpenter, 15220 Barton Lake Dr., Vicksburg, Mich. 49097; Richard W. Baker, 64485 Redmond-Bend Hwy., Bend, Oreg. 97701, and James W. Ayres, 2420 NW. 11th St., Corvalis, Oreg. 97331

Filed Mar. 23, 1979, Ser. No. 23,125

Int. Cl.³ A61M 7/00

U.S. Cl. 128—260 **1 Claim**



1. A medicated device adapted for a single and rate-controlled vaginal or rectal administration to a mammal of a SAP (systemically active pharmaceutical);

said administration being of a predetermined TD (therapeutic duration) of less than about 72 hours;

said administration resulting in the release of SAP from said device during the course of said administration at a predetermined, essentially time-independent RR (release rate) between about 1 μg and 1 gm per hour; and

said administration resulting in the exhaustion of said SAP from said device during the course of said treatment to the extent that the medicinal reuse of said device is essentially impossible; which comprises:

(1) a flexible polymeric DBM (drug-bearing membrane), containing dissolved and suspended therethrough said SAP and being further characterized by:

(a) a D_{DBM} (diffusion coefficient of said DBM with respect to said SAP) and an S_{DBM} (solubility in said DBM of said SAP);

(b) an SA (surface area) of said DBM on the order of 10–50 cm^2, being sufficiently great such that the RF (release flux of said SAP released from said device), which RF is the quotient which is said RR divided by said SA, is substantially less than the absorption rate per unit area of said SAP by the rectal or vaginal epithelial tissues of said mammal in contact with said device during said administration; and

(c) an essentially uniform T_{DBM} (thickness of said DBM) and a C_{DBM}, (initial concentration of said SAP in said device), which C_{DBM} is the quotient which is the amount of said SAP divided by the volume of said DBM;

(2) a flexible polymeric RCM (rate controlling membrane), being laminated onto a first surface of said DBM and being substantially coextensive therewith, being further characterized by:

(a) an S_{RCM} (solubility in said RCM of said SAP) and an essentially uniform T_{RCM} (thickness of said RCM); and

(b) D_{RCM} (diffusion coefficient of said RCM with respect to said SAP), such that the R_{RCM} (resistance of said RCM), which R_{RCM} is the quotient which is said T_{RCM} divided by the product of (i) K (partition coefficient between said DBM and RCM), which is the quotient which is said S_{DBM} divided by said S_{RCM} and (ii) said D_{RCM}, is at least very much greater than the R_{DBM} (resistance of said DBM), which R_{DBM} is the quotient which is said T_{DBM} divided by said D_{DBM}; and

(3) a physiologically inert, resilient, and water-insoluble

support means, having the second surface of said DBM laminally affixed to at least a portion of the surface thereof; being adapted, contoured, and dimensioned for accomodation of the entirety of said DBM on the surface thereof and for easy and comfortable rectal or vaginal insertion and withdrawal of said device; being essentially non-absorptive of said SAP; and being of substantially non-concave construction, whereby the surface of said device upon insertion is in essentially complete and intimate contact with rectal or vaginal epithelial tissues and associated secretions;

said device being further characterized by

(a) said T_{RCM} being approximately

$$(D_{RCM}S_{RCM})/RF \quad (1)$$

wherein RF, D_{RCM} and S_{RCM} are as defined above;

(b) a T_{50}, which is the time after TD for the RF to be reduced by 50 percent, being approximately

$$(1n2)[P/(1-P)](TD) \quad (2)$$

wherein P is the ratio of the amount of SAP remaining in said device at TD to the initial amount of SAP in said device, said P being characterized by a preselected value less than about 0.42; and wherein TD is as defined above;

(c) said T_{DBM} being approximately

$$[P/(1-P)][(RF)(TD)/S_{DBM}]-T_{RCM}/2K \quad (3)$$

wherein K, TD, T_{RCM}, RF, and P are as defined above; and

(d) said C_{DBM} being approximately

$$[(RF)(TD)]/[(1-P)T_{DBM}] \quad (4)$$

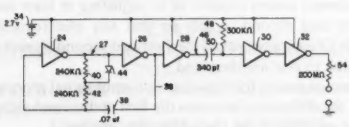
wherein P, RF, TD, and T_{DBM} are as defined above.

4,308,868

IMPLANTABLE ELECTRICAL DEVICE

Murzban D. Jhabvala, Seabrook, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 27, 1980, Ser. No. 153,246
Int. Cl.³ A61N 1/32
U.S. Cl. 128—421 **8 Claims**



1. An implantable therapeutic device comprising:

a flexible electrode array for surrounding a nerve in its damaged area;

circuit means for developing a continuous series of square wave pulses of electrical energy at a predetermined frequency;

circuit means for stretching each of said square wave pulses.

circuit means for reversing the polarity of said stretched square wave pulses to provide short duration impulses of electrical energy;

means for energizing all of said circuit means; and

impedance means for applying a series of said short duration impulses of electrical energy in the nanosecond range to said array to regenerate the damaged area of said nerve.

4,308,869

BRASSIERE

Steven G. Boyen, 3875 Wilshire Blvd., Los Angeles, Calif. 90010

Filed Mar. 3, 1980, Ser. No. 126,454
Int. Cl.³ A41C 3/10, 3/00
U.S. Cl. 128—478 **3 Claims**

1. A brassiere comprising:

two breast cups, each formed in the shape of a woman's breast, and having the approximate center of the outer surface of each cup integrally formed into a nipple member, each of said nipple members being ductless and surrounded by an areola, said areola being integrally formed from one of said breast cups;

a translucent covering fitting over each of said breast cups and having an edge member at its outer perimeter, said edge member being connected to the corresponding outer edge of said breast cups and;

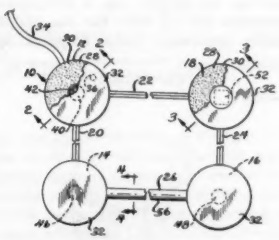
means connecting said breast cups to each other and to shoulder straps.

4,308,870

VITAL SIGNS MONITOR

Edward J. Arkans, Schaumburg, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Jun. 4, 1980, Ser. No. 156,246
Int. Cl.³ A61B 5/02
U.S. Cl. 128—640 **13 Claims**



1. A vital signs monitor, comprising:

at least two pads having a front surface for contacting the chest of a patient, and means for connecting said pads together;

means connected between said two pads for detecting movement of the chest; and

means in said pads for monitoring a body function of the patient, with at least one of said pads containing an ECG electrode, and a conductive lead connected to said electrode.

4,308,871

CUFF MECHANISM FOR BLOOD PRESSURE MEASURING SYSTEM

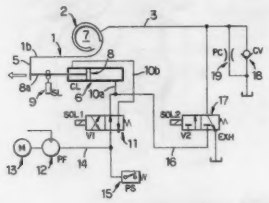
Hiroyuki Shouda, and Kenichi Sakurado, both of Komaki, Japan, assignors to Nippon Colin Co., Ltd., Aichi, Japan

Filed Jan. 9, 1980, Ser. No. 110,622

Claims priority, application Japan, Feb. 7, 1979, 54-12978; Feb. 7, 1979, 54-12979

Int. Cl.³ A61B *5/02*

U.S. Cl. 128—686 **7 Claims**



7. A cuff mechanism for use with a blood measuring system comprising a flexible band having a secured end and a movable end, said flexible band being substantially cylindrically rolled for receiving a patient's limb in which blood circulation is temporarily cut off by compression about the limb received in the cylindrical roll by pulling the free end of said flexible band, a flexible air chamber lying along a portion of the interior surface of said band between said flexible band and the patient's limb such that further pressure can be exerted on the patient's limb by filling the flexible air chamber with air, the free end of said flexible band being connected to an air cylinder for pulling the band in a tangential direction to the cylindrical roll for circumferentially contracting said cylindrical roll about the patient's limb, and air supply means for supplying air to both said flexible air chamber and said air cylinder, and including a plurality of valves and a pressure sensitive switch.

4,308,872

METHOD AND APPARATUS FOR MONITORING RESPIRATION

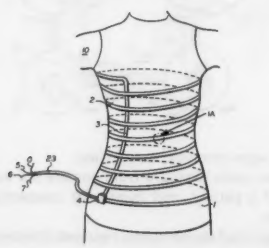
Herman L. Watson, Perrine; Marvin A. Sackner, Miami Beach, both of Fla., and Frank D. Stott, Oxford, England, assignors to Respitrace Corporation, Ardsley, N.Y.

Continuation of Ser. No. 893,023, Apr. 3, 1978, abandoned. This application Dec. 11, 1979, Ser. No. 102,408

Claims priority, application United Kingdom, Apr. 7, 1977, 14783/77

Int. Cl.³ A61B *5/08*

U.S. Cl. 128—725 **20 Claims**



1. Apparatus for monitoring volumetric respiration comprising:

elastically deformable means for disposition about a torso in elastically deformed condition for self-biasing said means into close encircling relation with said torso;

a first extensible electrical conductor mounted on said elastically deformable means and extending circumferentially about a first portion of said torso comprising the rib cage;

a second extensible electrical conductor mounted on said elastically deformable means and extending circumferentially about a second portion of said torso comprising the abdomen;

means for separately and simultaneously measuring the inductances of each of said conductors;

means for weighting said measured inductances to reflect the different contributions from said first and second torso portions to said respiration volume; and

means for summing said weighted measured inductances and for providing a signal indicative thereof, whereby said signal is substantially proportional to said respiration volume.

4,308,873

ELECTROENCEPHALOGRAPH MONITORING

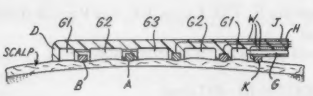
Douglas E. Maynard, London, England, assignor to National Research Development Corporation, London, England

Filed Mar. 9, 1979, Ser. No. 18,894

Claims priority, application United Kingdom, Mar. 16, 1978, 10382/78; Oct. 10, 1978, 40034/78

Int. Cl.³ A61B *5/04*

U.S. Cl. 128—731 **12 Claims**



1. Apparatus for monitoring a brain electroencephalogram (EEG) comprising:

at least three electrodes providing voltage signals indicative of brain EEG,

an insulated carrier on which the electrodes are mounted and which is constructed to be held to the scalp of the brain to be monitored,

first circuit means for providing a first signal which is a function of the voltage signals at two of the electrodes,

second circuit means for providing a second signal which is, at least partially, a function of the voltage signal at a third of the electrodes,

adjustment means capable of so adjusting at least one of the first and second signals so that any electrocardiograph (ECG) components of the first and second signals become equal to one another, and

difference means for deriving an output signal representative of the difference between the first and second signals after the adjustment by the adjustment means.

4,308,874

DIAGNOSIS OF EYE TUMORS

A. Robert Bellows, Topsfield, and David Tapper, Newton, both of Mass., assignors to The Children's Hospital Medical Center, Boston, Mass.

Filed Feb. 5, 1980, Ser. No. 118,848

Int. Cl.³ A61B *10/00*

U.S. Cl. 128—745 **2 Claims**

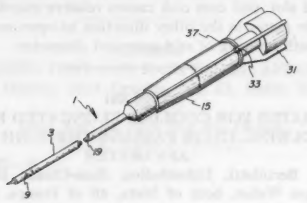
1. A method of detecting malignant tumors in mammalian eyes which comprises extracting a specimen of aqueous humor from an eye and assaying the specimen for angiogenesis capacity.

4,308,875

AMNIOCENTESIS NEEDLE

Ruperto S. Young, Amsterdam, N.Y., assignor to Universal Medical Instrument Corporation, Ballston Spa, N.Y.

Filed Mar. 11, 1981, Ser. No. 242,713
Int. Cl.[3] A61B *10/00*
U.S. Cl. 128—753 6 Claims



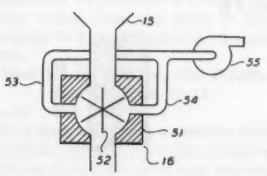
1. An amniocentesis needle for use in performing amniocentesis, to obtain amniotic fluid and fetal debris from a pregnant woman's uterus for diagnostic purposes; said amniocentesis needle comprising a needle hub, hollow needle, stylet hub and stylet, said hollow needle having a distal end and a proximal portion, said needle hub receiving and carrying said hollow needle at said hollow needle's said proximal portion, said stylet hub having a proximal portion, said stylet hub receiving and carrying said stylet at said stylet's said proximal portion, said hollow needle having a lumen, said needle hub being of open cylindrical configuration, and, in assembled relationship for use preparatory to performing amniocentesis: said lumen removably and complementally receiving said stylet therein in close fitting relationship and said needle hub receiving said stylet hub in mounting relationship with said stylet hub facilitating manipulation thereof in performing amniocentesis, said stylet having a sharp-cutting tip at its distal end to penetrate the skin, fascia and uterine muscle of the pregnant woman to allow said hollow needle, after removal of said stylet from said hollow needle, to be disposed into the amniotic cavity for aspiration therefrom of amniotic fluid and fetal debris; said amniocentesis needle having means on its said distal end cooperating to permit said hollow needle to be manipulated and otherwise moved while in the uterus without injury to the fetus; said amniocentesis needle being of such size to obviate trauma to the pregnant woman, her uterus and tissue, the leakage of amniotic fluid through the needle tract, and to obviate endometriosis; said amniocentesis needle having means, axially spaced from its said distal end, cooperating to minimize suction pressure in the uterine cavity and thereby to obviate disturbance of the fetal environment, to equalize suction of amniotic fluid, to aspirate pure and uncontaminated amniotic fluid and fetal debris without clogging.

4,308,876

METHODS AND APPARATUS FOR EXPANDING TOBACCO

Ronald D. Rothchild, South Orange, N.J., assignor to Airco, Inc., Montvale, N.J.

Filed Feb. 16, 1979, Ser. No. 13,484
Int. Cl.[3] A24B *3/18*
U.S. Cl. 131—293 9 Claims



1. A method of expanding tobacco comprising the steps of introducing solid carbon dioxide containing tobacco into an expansion chamber through an inlet thereof; heating said tobacco to expand the same by subliming carbon dioxide into the atmosphere of said chamber; passing said expanded tobacco together with said chamber atmosphere to a separating device; separating said expanded tobacco and chamber atmosphere in said separating device; and discharging said expanded tobacco through an outlet of said separating device while substantially precluding gas flows through said outlet.

4,308,877

METHOD OF MAKING RECONSTITUTED TOBACCO HAVING REDUCED NITRATES

Charles F. Mattina, Lenox, Mass., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Mar. 6, 1978, Ser. No. 883,449
Int. Cl.[3] A24B *15/18;* B24B *15/20;* A24B *15/24*
U.S. Cl. 131—297 4 Claims

1. A method of making reconstituted tobacco, comprising the steps of:

(a) extracting natural tobacco with water to produce a tobacco extract and a fibrous residue,

(b) forming the fibrous residue into a paper-like web,

(c) preparing a microorganism bed by repeatedly cycling a particular quantity of tobacco extract through a filtering medium to cause microorganisms occurring naturally in the tobacco extract to multiply on the filtering medium, the cycling taking place in a substantially anaerobic environment and the microoganisms deposited on the filtering medium being capable of reducing nitrate in the tobacco extract to nitrogen,

(d) thereafter passing another quantity of tobacco extract through the microorganism bed, in a substantially anaerobic environment, so that the extract comes into intimate contact with the microorganisms and nitrate is thereby removed from the extract by reduction of the nitrate to nitrogen, and

(e) recombining the denitrated extract of step (d) with the fibrous tobacco web.

4,308,878

CURLING IRON HOLDER

Wilbur W. Silva, 704 Creek View Ct., Modesto, Calif. 95351

Filed Nov. 29, 1979, Ser. No. 98,704
Int. Cl.[3] A45D *2/24*
U.S. Cl. 132—37 R 4 Claims

1. A heat insulative holder for an electric curling iron that has a handle, an elongate rod extending from the handle and an electric heating element internally of the rod for heating the rod comprising a body formed of molded synthetic plastic material of low heat conductivity and resistant to softening at elevated temperature, said body having a length greater than the length of said rod and a wall surface defining an elongate axially extending cavity for receiving said rod therein, said cavity having a cross sectional shape substantially greater than that of said elongate rod, said cavity having a first end opening to an axial extremity of said body and defining a mouth for affording insertion of said rod into said cavity, a plurality of axially and circumferentially limited guides rigid with said wall surface and projecting radially into said cavity at a location remote from and axially inward of said mouth, said guides having respective radial inner surfaces that are disposed to center said rod in said cavity in spaced apart relation to said

wall surface and form a support site so as to form a space around said elongate rod between said rod and said wall surface, said guide surfaces having bevelled portions at the axial portions thereof proximate said mouth which diverge radially outward toward said mouth for guiding said rod into said support site.

4,308,879

COATING IMPLEMENT AND APPLICATOR

Leah L. Thornbloom, 7771 S. Harison Cir., Littleton, Colo. 80122

Filed Sep. 10, 1980, Ser. No. 185,984
Int. Cl.³ A45D *40/30*
U.S. Cl. 132—88.5 **15 Claims**

1. A coating implement and applicator, comprising:
a longitudinally elongated casing defining therein an applicator compartment, said casing being separably longitudinally divided into first and second juxtaposed casing portions having a mutually non-symmetrical common end such that said common end of one casing portion is engageable in the common end of the other casing portion when said casing portions are placed in longitudinal tandem alignment; and applicator means carried by one of said casing portions in the applicator compartment portion thereof in position such that at least a portion of said applicator means is exposed from the applicator compartment portion when the casing portions are in longitudinal tandem alignment.

4,308,880

ANIMATED DENTAL FLOSS DISPENSER

Rodney J. Graves, 17619 N. 35th Pl., Phoenix, Ariz. 85032

Filed Sep. 11, 1980, Ser. No. 186,139
Int. Cl.³ A61C *15/00*
U.S. Cl. 132—92 A **7 Claims**

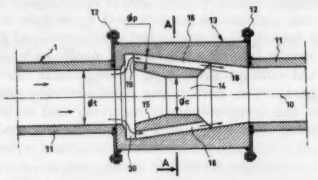
1. An animated dental floss dispenser comprising:
a hollow housing displaying an animated character through an opening therein;
said character having a mouth opening,
a mechanism for animating said character,
said mechanism comprising a backplate mounted behind said animated character and having a pair of sliding plates mounted thereon for opening and closing said mouth opening,
said plates having pins extending laterally therefrom,
a cam disk mounted adjacent said plate for moving said pins and said slide plates in a predetermined direction,
said cam disk comprising a prong for engaging a piece of floss passing thereover for rotation of said cam disk upon predetermined movement of said floss, and
a spool of floss mounted adjacent said cam disk,
said housing having a slot extending therethrough,
whereby when a piece of the floss from said spool is fed over said prong and through said slot and is pulled toward one end of said slot, said cam disk causes movement of said slide plates relative to each other in one direction and when the piece of floss is pulled toward the other end of said slot, said cam disk causes relative movement of said slide plates in the other direction to open and close said mouth opening of said animated character.

4,308,881

APPARATUS FOR COOLING ELONGATED PRODUCTS DURING THEIR PASSAGE THROUGH THE APPARATUS

Francis Bertolotti, Colombelles; Jean-Claude Daverio, and Georges Weber, both of Metz, all of France, assignors to Institut de Recherches de la Siderurgie Francaise, Saint-Germain-en-Laye, France

Filed Jan. 21, 1980, Ser. No. 115,554
Claims priority, application France, Jan. 19, 1979, 79 01567
Int. Cl.³ B08B *3/04*
U.S. Cl. 134—122 R **9 Claims**



1. Apparatus for cooling an elongated product during its passage through the apparatus and comprising an elongated tube having a cooling fluid inlet at one end and a cooling fluid outlet at the other end so that the cooling fluid may pass in longitudinal direction through the tube; means connected to said tube for centralizing the product to be cooled with respect to said tube, said centralizing means comprising at least one annular centralizing element axially displaced from opposite ends of said tube and provided with a central passage therethrough coaxial with said tube and having a diameter smaller than the inner diameter of the tube for the passage of the product to be cooled and a plurality of channels arranged radially outwardly of said central passage and distributed about the latter for the passage of cooling fluid therethrough.

4,308,882

TENTS FOR MILITARY USE AND PROVIDING PROTECTION AGAINST MODERN SIGHT AND IR-OPTICAL SEARCH METHODS

Günter Pusch, Bannholzweg 12, 6903 Neckargemund 2, and Alexander Hoffmann, Heidelbergerstr. 24,, 6901-Mauer, both of Fed. Rep. of Germany

Filed May 31, 1979, Ser. No. 44,010
Int. Cl.³ A45F *1/12*; F41H *3/00*
U.S. Cl. 135—1 R **8 Claims**

1. A tent arrangement providing protection against sight-optical and IR-optical search methods the improvement consisting of the tent having a multiple wall construction with the

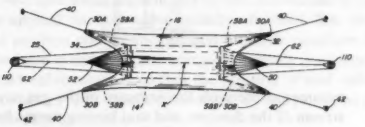
walls comprised of outer and inner layers of a plastic coated metallized cloth, metallized on both sides and covered with a coating generally pervious to the infrared portion of the spectrum ranging from substantially 3 to 20 μm, but not pervious in the visible range of the spectrum and having an air gap between said walls to enable laminer air flow therebetween said outer wall being provided on its outside surface with a camouflage paint.

4,308,883

SUSPENDED TENT AND RAIN GUARD APPARATUS

Jerald C. Malone, 2424 Drusilla, No. 63, Baton Rouge, La. 70809

Filed Aug. 23, 1979, Ser. No. 68,912
Int. Cl.³ A45F *1/12, 3/22*
U.S. Cl. 135—8 **9 Claims**



1. A suspended tent and rain guard apparatus comprising:
a. a personnel compartment comprising an upper rectangular elongated generally horizontal roof, a lower rectangular elongated floor generally coplanar with said roof, and a plurality of said side walls connecting said upper roof and said floor;
b. a pair of upper load lines attached respectively to two opposite and parallel sides of said roof and parallel with the longitudinal axis of said roof, each upper load line having attachment means at its opposite end portions or suspendly supporting at least a portion of said roof and said personnel compartment against gravitational forces;
c. a pair of lower load line floor supporting members attached respectively to opposite end portions of said floor and extending in directions away from said floor during operations, said lower load lines being generally parallel to the longitudinal axis of said floor, and said roof during operation;
d. spreader means provided at each end portion of said floor member for laterally stressing said floor when said personnel compartment is suspended by said upper and said lower load lines; and
e. rain fly means above said roof and attaching to said roof at least in part to said roof at its periphery for bracing said personnel compartment against said lateral movement with respect to its longitudinal axis, said rain fly means having parabolic load carrying end portions, each of said end portions associated with a pair of tensile peg anchors for applying tensile force at least in part in a lateral direction to said fly means as said parabolic load carrying end portions.

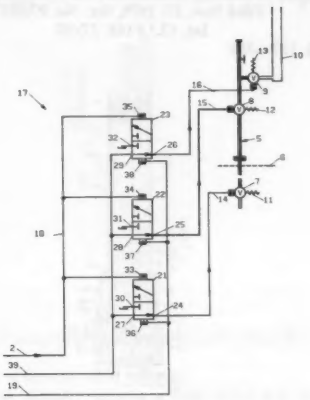
4,308,884

METHOD FOR TRANSMISSION OF PRESSURE SIGNALS THROUGH A CONDUIT

Carl R. Hoerger, Logan, Utah, and Brian W. Smith, Calgary, Canada, assignors to Exxon Production Research Company, Houston, Tex.

Filed Jul. 24, 1980, Ser. No. 171,686
Int. Cl.³ F16K *31/12*
U.S. Cl. 137—14 **11 Claims**

1. In a method for transmitting a pressure signal through a fluid-filled conduit by introducing to the conduit a step change in input pressure to yield a first of at least two step input pressure levels, wherein, after a distinct actuation time, the change in output pressure at a distance location in the conduit resulting from said step change in input pressure is equal to a percentage of said step change in input pressure and a first of at least two output pressure levels is thereby generated, the improvement comprising:
(a) introducing to the conduit a pulse change in input pressure of a magnitude substantially greater than said step change in input pressure for a time period shorter than said actuation time, said greater magnitude and said



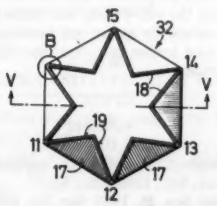
shorter time period being chosen such that the output pressure at the distant location resulting from said pulse change in input pressure at no time reaches a second of said two output pressure levels; and
(b) at the end of said shorter time period, changing the input pressure to the conduit to a maintenance level, said maintenance level being between said first output pressure level and said second output pressure level.

4,308,885

TUBULAR SAFETY ELEMENT FOR CLOSING A FLOW LINE

Max Geisseler, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Dec. 1, 1980, Ser. No. 211,818
Claims priority, application Switzerland, Dec. 5, 1979, 10776/79
Int. Cl.³ F16K *13/04*
U.S. Cl. 137—67 **9 Claims**



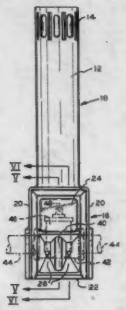
1. A tubular safety element for closing a flow line, said element defining a flow path and being peripherally folded to form a star-shaped cross-section having n-points at one end with pairs of triangular sections extending from said end to form a respective point and a regular polygonal cross-section defining n-sides at an opposite end, each said side having a corner in line with a respective point, said element being collapsible under a predetermined differential pressure between the exterior of said element and the interior of said element

with each pair of triangular sections defining a respective point being disposed in parallel relation.

4,308,886
CURB BOX

Edward W. Handley, Jackson; Richard E. Hammond, Rives Junction, and Robert E. Diffenderfer, Jackson, all of Mich., assignors to Handley Industries, Inc., Jackson, Mich.

Filed Nov. 27, 1979, Ser. No. 97,655
Int. Cl.³ F16K *27/00*
U.S. Cl. 137—365 **1 Claim**



1. A curb box for underground valves having a valve body including an elongated tubular stem having a lower end formed of a resilient synthetic material defining a valve receiving bell housing, said bell housing having an open lower end, end walls, side walls intermediate said end walls, and openings defined in said end walls intersecting said open lower end for receiving valve structure, the improvement comprising a projection defined upon each bell housing side wall homogeneously formed of the associated side wall material and extending toward each other into the chamber defined by the side and end walls, each projection including a valve body engaging surface, an inwardly extending apex adjacent each surface located vertically therebelow and a cam surface below said apex obliquely disposed to the vertical, said projections frictionally engaging the sides of a valve body upon the bell housing being placed upon a valve through said open lower end, the normal spacing between opposed projection valve body engaging surfaces being less than the dimension of the valve body engaged thereby whereby the bell housing side walls are biased transversely of the valve body by engagement of said projections with the valve body increasing the frictional engagement of said projections and the valve body, said cam surfaces engaging the valve body and biasing said projections and side walls outwardly as the bell housing is lowered upon the valve until said apexes pass over the valve body and are disposed thereunder.

4,308,887
GAS DAMPER

Joseph R. van Bogaert, Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed Sep. 26, 1980, Ser. No. 190,917
Int. Cl.³ G05D *11/03*
U.S. Cl. 137—112 **5 Claims**

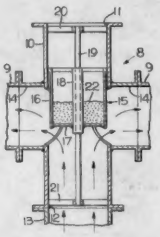
1. A gas stream damper adapted to regulate the flow of a first gas stream and direct a second gas stream through the damper when the first gas stream is not flowing, comprising:

a generally cylindrical housing having a first gas stream inlet at one end and a second gas stream inlet at the other end of the housing;

a floating piston mounted within the housing having a cylindrical outer wall;

a gas stream outlet in the housing spaced from said first inlet between said first and second inlets; and

biasing means urging the piston toward said first inlet, said piston being selectively displaced by the buoyant force of the first gas stream flowing through the housing between said first inlet and said outlet to position it in partial covering relationship with respect to the outlet to vary the discharge rate of the first gas stream from the housing

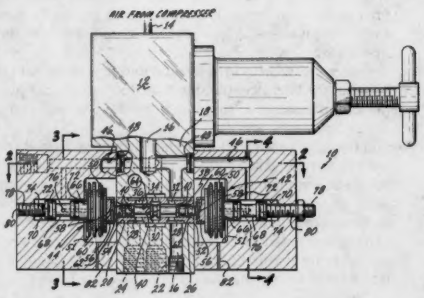


commensurate with the pressure in the gas stream downstream of the damper, and said biasing means being operative to position said piston between said first inlet and said outlet so that substantially the entire length of said cylindrical outer wall cooperates with the housing to close-off said first inlet while accommodating an essentially unobstructed flow of the second gas stream through the housing between said second inlet and said outlet when said first gas stream is not flowing.

4,308,888
PRESSURE REGULATOR

Carroll G. Gordon, 3 William Ct., Menlo Park, Calif. 94025

Filed Mar. 17, 1980, Ser. No. 130,698
Int. Cl.³ G05D *16/08*
U.S. Cl. 137—116.3 **7 Claims**



1. A fluid pressure regulator having a valve structure including a valve body having first, second and third valve ports, a first passage leading to said first port, a second passage leading to said second port, and a third passage leading to said third port and including a valve member located with respect to said valve body so as to be capable of being reciprocated with respect to said valve ports so as to be located so as to prevent flow between said ports or so as to control flow from said first port to said second port while preventing flow from said second port to said third port or so as to control flow from said second port to or from said third port while preventing flow from said first port to said second port, in which the improvement comprises:

a first position control means for applying a force to said valve member so as to tend to move said valve member in

one direction in accordance with the fluid pressure in said first passage so as to permit flow between said first and second ports while preventing flow from said second port to said third port, said first position control means comprising a movable member which is movable during the operation of said regulator in response to pressure in said first passage,

a second position control means for applying a force to said valve member so as to tend to move said valve member in the opposite direction in accordance with the fluid pressure in said second passage so as to permit flow between said second and third ports while preventing flow from said first port to said second port, said second position control means comprising a movable member which is movable during the operation of said regulator in response to the pressure in said second passage,

the position of said valve member with respect to said ports at any one time being determined by the differential in the forces applied to said valve member by said first and second position control means, said movable members of said position control means being operatively associated with said valve member so that the position of said valve member at any one time is determined by the positions of said movable members,

said movable members being separate and apart from said valve member and being located generally between different parts of said valve body and said valve member so as to bear against different portions of said valve member,

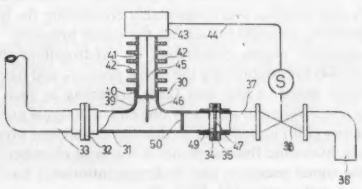
said valve member being capable of being moved only in response to force applied to it by said movable members.

4,308,889

ELECTRIC CONDUCTIVE TYPE STEAM TRAP

Jih-Shyan Lin, 6, Hsin-Kun Rd., Tien-Chung, Chung-Hua Hsien; Wuu-Shyong Lin, 28, Chung-Hsi Rd., Lin-Nei County, Yun Lin Hsien; Kwei-Lin Chen, and Chen-Jiing Wen, both of 6, Hsin-Kun Rd., Tien Chung, Chang-Hua Hsien, all of Taiwan

Filed Apr. 30, 1980, Ser. No. 144,992
Int. Cl.³ F16T *1/00*
U.S. Cl. 137—187 **3 Claims**



1. An electric conductive type steam trap comprising:

a trap body for containing the condensate with one end thereof connected to the steam pipe and another end thereof connected to the condensate discharge pipe;

a condensate level detecting apparatus for detecting the level of the condensate in said trap body;

an electric control apparatus receiving the signal picked up by said condensate level detecting apparatus and to control the ON and OFF of a relay;

an electric solenoid installed in the condensate discharge pipe, and controlled by said relay to control the discharge of the condensate; and

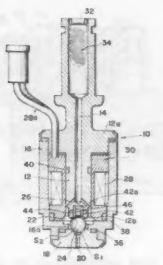
an orifice apparatus installed in the steam pipe between the trap body and the electric solenoid, and contributing the flashing of the high pressure and high temperature condensate to atmosphere.

4,308,890

ELECTROMAGNETIC VALVE FOR FLUID FLOW CONTROL

Masaaki Saito, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Japan

Filed Mar. 3, 1980, Ser. No. 126,987
Claims priority, application Japan, Mar. 8, 1979, 54-29434[U]
Int. Cl.³ F16K *31/06*
U.S. Cl. 137—495 **5 Claims**



1. An electromagnetic valve for controlling fluid flow, comprising:

a magnetic spherical valve member;

a valve seat member defining a fluid outlet and having a valve seat surface (S_1) on which said spherical valve member is seatable to close said fluid outlet, said fluid outlet being closable by said valve member when fluid pressure prevailing upstream of said valve member is higher than the fluid pressure prevailing downstream of said valve member;

a central magnetic pole member having a valve contacting surface (S_2) on which said valve member is contactable, said magnetic pole member being located opposite to said valve seat member so that said valve member is disposed between the valve seat surface of said valve seat member and the contacting surface of said magnetic pole member, said magnetic pole member capable of attracting the spherical valve member to separate from the valve seat surface of said valve seat member so as to open said fluid outlet, said magnetic pole member being formed with a hollow at the valve contacting surface thereof; and

an expandable pressure responsive member disposed in said hollow of said magnetic pole member, said pressure responsive member being able to expand to bias said valve member onto the valve seat surface of said valve seat member so as to close said fluid outlet when the fluid pressure prevailing upstream of said valve member is lower than a predetermined level.

4,308,891

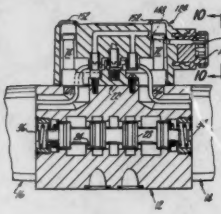
TERMINAL BLOCKS AND INDICATOR FOR SOLENOID VALVES

Ronald L. Loup, Clarkston, Mich., assignor to Double A Products Co., Manchester, Mich.

Filed Mar. 31, 1980, Ser. No. 135,974
Int. Cl.³ F16K *31/02*
U.S. Cl. 137—551 **20 Claims**

1. A solenoid operated directional valve comprising a valve body having a solenoid mounted on one of its ends and a mounting surface on one of its sides, a junction box releasably secured on said mounting surface and constructed to receive electrical conduit means at its one end, a terminal block mounted on said mounting surface within said junction box, said terminal block having a ground connector and a pair of electrical connectors to which a pair of electrical leads from said solenoid are connected for completing a circuit with the solenoid, and an electrical plug plugged into said terminal block and having ground and electrical connectors in engage-

ment with corresponding connectors of said terminal block, said electrical plug having its connectors connected to corresponding ground and electrical conductors of said electrical conduit means so that electric current for energizing said solenoid can be supplied by said electrical conduit means, characterized in that the connectors in said terminal block and in said electrical plug are arranged so that the electrical plug can be plugged into the terminal block in a first position in which the junction box is positioned to have its one end facing



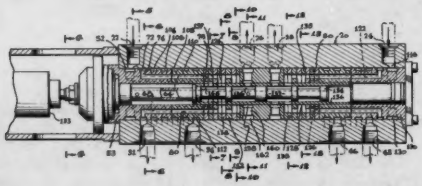
in the direction of said solenoid or in a second position in which the electrical plug is rotated one hundred eighty degrees and in which the junction box is positioned to have its one end facing in the opposite direction of said solenoid, the arrangement of the connectors in the terminal block and the electrical plug being such that an electrical circuit will be closed through said solenoid and a ground connection will be completed so as to provide continuity of operation of the solenoid and the ground connection irrespective of whether the electrical plug is in its first or its second position.

4,308,892

ROTARY VALVE

Robert K. Van Ausdal, La Crescenta, Calif., assignor to The Bendix Corporation, North Hollywood, Calif.

Filed Oct. 9, 1979, Ser. No. 83,045
Int. Cl.³ F16K *11/07*
U.S. Cl. 137—625.23 **10 Claims**



1. A rotary valve for distributing flow to a hydraulic motor including a housing, a fluid inlet port and a fluid return port in said housing for connection to a source of fluid under pressure and a plurality of motor ports for connection to corresponding parts of said motor, fluid distribution means in said housing including an internal cylindrical bore and a driven rotary valve member in said cylindrical bore for directing flow between said inlet and return ports and said motor ports,

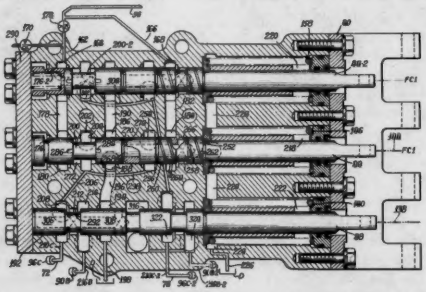
characterized in that said fluid distribution means comprises block means in said housing including a passageway constituting at least part of said bore, said block means also including circuit means connecting said inlet and return ports and said motor ports to said bore adjacent said rotary valve member, and a plurality of stacked disks communicating with said conduit means having openings and slots at desired radial positions communicating with said rotary valve member, the positioning of said openings and slots cooperating with said rotary valve member for controlling the delivery of flow from said inlet ports to selected said motor ports and from other selected motor ports to said return port, said block means further including a first block having an annular chamber communicating with said inlet port, a first group of axial bores connected to said annular chamber, a series of annular chambers communicating with individual said motor ports, a second group of axial bores each connected to individual annular chambers of said series, said second group of axial bores being connected to said disks.

4,308,893

CLUTCH-BRAKE STEERING VALVE MECHANISM FOR TRACTORS

Daniel B. Shore, Niles, and Probir K. Chatterjea, Mount Prospect, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Division of Ser. No. 708,956, Jul. 26, 1976, Pat. No. 4,164,276, which is a division of Ser. No. 561,119, Mar. 24, 1975, Pat. No. 4,015,619. This application Feb. 9, 1979, Ser. No. 10,568
The portion of the term of this patent subsequent to Apr. 5, 1994, has been disclaimed.
Int. Cl.³ F15B *13/08*
U.S. Cl. 137—625.69 **4 Claims**



4. For use in an hydraulic system regulated according to a master pressure setting and including hi (56) and lo (D) pressure conduits:

signal-pressure setting valve assemby means (40) with a bore (176) therein hydraulically disposed for communicating with said conduits and controllably connecting the hi and lo pressure conduits for setting the signal pressure;

said assembly means comprising an hydropotentiometer spool (44) for establishing the signal pressure and having a pressure sensitive end area (254) extending in such way into, and defining in such way one end of, a signal pressure chamber (270) in said bore so that the established pressure on the hydraulic fluid at points in the bore chamber is set as the signal pressure, said hydropotentiometer having a second end portion (44, FIG. 1);

said hydropotentiometer spool being of an elongated shape so as to vary the signal pressure established thereby between the hi and lo pressure conduits from a maximum to a minimum proportionately along its length and specifically from the maximum to the minimum as the pressure sensitive end area takes movement in a direction of withdrawal from said bore chamber; and

heavy means (146) biasing the second end portion (44, FIG. 1) in continual opposition to the signal pressure on the spool end area (254) as the signal pressure thereon proportionately reduces from maximum to minimum when the end area takes its movement in the direction of withdrawal from said bore chamber;

said second end portion protruding externally from the valve assembly means and providing a master signal setting pull connection for causing the end area to take its movement in the direction of withdrawal thereby causing

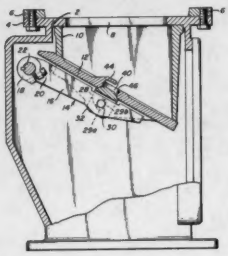
that signal pressure thereon to proportionately reduce from maximum to minimum as desired.

4,308,894

DUST TRAP AND VALVE WITH AUXILIARY PRESSURE EQUALIZING VALVE

Urgel R. Carpentier, 3 Bailey Ave., Plattsburgh, N.Y. 12901

Filed Jan. 15, 1980, Ser. No. 112,332
Int. Cl.³ G01F *11/26;* F16K *1/20*
U.S. Cl. 137—630.15 **4 Claims**



1. In a dust trap which defines a flow path axially therethrough, a device positioned within said dust trap and in said flow path for controlling the flow therethrough, comprising:

(a) a valve seat defining an opening, a matching valve flap, and an articulated single arm drive train having flap connecting means for supporting said flap to move the same in response to movement of said drive train into and out of closing engagement with said valve seat;

(b) said flap connecting means including as an integral part thereof, a two-piece pressure regulating valve comprising a port and a matching plunger, with the port being defined by said flap to provide for a flow therethrough when said plunger is displaced from said port, said flap having a shield on the side opposite said plunger and substantially covering said port to prevent clogging of said pressure regulating valve;

(c) said plunger and said flap each having a common connection to said articulated drive train in a manner to provide for a predetermined incremental movement of said plunger in either direction before said flap responds to the movement of said train, whereby when said drive train is actuated to move said flap towards its open position, said plunger is withdrawn from said port to first release and balance the pressure across said flap before said flap is removed from its valve seat and whereby said plunger positively closes said port before the flap is moved toward its closed position.

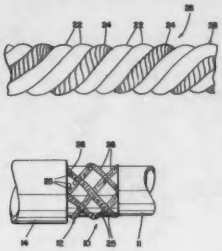
4,308,895

FLAME BONDED HOSE

John R. Greco, Ravenna, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Jan. 25, 1980, Ser. No. 115,167
Int. Cl.³ F16L *11/08*
U.S. Cl. 138—125 **5 Claims**

1. A hose construction comprising a tubular core formed of a thermoplastic material for conducting fluids therethrough, reinforcement means wound about said core in intermixed first and second portions, at least one of said first and second portions comprising a yarn bundle of twisted yarns of polypropylene and reinforcement material, said first and second portions being wrapped about said core tube in a relatively evenly distributed arrangement to provide discontinuous bonding portions of polypropylene at the periphery thereof in tangency with the inner periphery of an imaginary cylindrical surface disposed thereabout, and an outer cover of olefinic material extruded over said reinforcement layer, said outer cover having an inner surface in contact with said bonding portions and



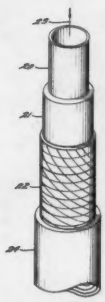
being fused thereto to secure said cover against movement relative to said reinforcement layer.

4,308,896

FABRIC REINFORCED HOSE

Delbert A. Davis, Kernersville, N.C., assignor to Burlington Industries, Inc.

Filed Dec. 31, 1979, Ser. No. 108,701
Int. Cl.³ F16L *11/00;* B65H *81/00*
U.S. Cl. 138—126 **7 Claims**



1. A hose comprising a layer of a reinforcing fabric between an inner natural or synethetic rubber tube and an outer natural or synthetic rubber covering, said reinforcing fabric having two sets of yarns, said sets of yarns consisting of warp yarns and filling yarns, wherein:

(i) the bias angle between the warp yarns and the filling yarns of said fabric is biased from about 87 degrees to about 65 degrees; and

(ii) the yarns of one set of yarns are circumferentially perpendicular to the center line of said hose.

6. A method for manufacturing a hose comprising the steps of;

(a) coating a mandrel with a tube of natural or synethtic rubber;

(b) wrapping a reinforcing fabric around said tube; and

(c) coating said fabric with a covering material of natural or synthetic rubber, wherein:

(i) said reinforcing fabric has a bias angle between the warp yarns and the filling yarns of said fabric biased from about 87 degrees to about 65 degrees; and

(ii) said reinforcing fabric is incorporated in said hose in a manner such that said warp yarns of said fabric are circumferentially perpendicular to the center line of said hose.

(107) Patent Cooperation Treaty Update

The following notice is an updating of information concerning the Patent Cooperation Treaty (PCT) relating to the following items:

I. Fee Increase effective January 1, 1982.
II. Ratification by Belgium and listing of PCT member countries.
III. Amendments to Regulations under the PCT effective on October 1, 1981.
IV. Modification of the Administrative Instructions under the PCT.
V. Revised Request form PCT/RO/101.
VI. Completed sample revised Request form.

I. *Fee increase effective January 1, 1982*

The PCT Assembly has established the following international fees to become effective on January 1, 1982.

International Basic Fee (for the first 30 sheets of an international application)	$270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
International Designation Fee (for each State for which a national patent is sought, or for each group of States for which the same regional patent is sought	65.00

II. *Ratification by Belgium and listing of PCT Member Countries*

The Patent and Trademark Office has received notification from the World Intellectual Property Organization (WIPO) that Belgium deposited its ratification of the PCT on September 14, 1981. Therefore, according to PCT Article 63(2), Belgium may be designated in international applications filed on and after December 14, 1981. Belgium indicated in its ratification that it can only be designated by way of regional protection through the European Patent Convention. This provision is similar to the action taken by France. Therefore, any designation of Belgium in an international application will be considered to be a designation of Belgium for a Regional Patent.

III. *Amendments to the Regulations under the PCT*

Adopted by the Assembly of the International Patent Cooperation Union (PCT Union) on July 3, 1981.

Table of Amendments

Rule 3.3(a)	Amended*
Rule 4.1(c)	Amended
Rule 4.4(c)	Amended*
Rule 4.4(d)	Amended*
Rule 4.6(b)	Amended*
Schedule of fees	Amended**

* With effect on and from October 1, 1981.
** With effect on and from January 1, 1982.

Amendments
Rule 3
The Request (Form)

3.1 [No change]
3.2 [No change]
3.3 *Check List*
(a) The printed form shall contain a list which, when filled in, will show:
(i) [No change]

LIST OF PCT MEMBER STATES

State	Ratification or Accession	Date of Ratification or Accession	Date From Which State May Be Designated
(1) Central African Republic*	Accession	15 September 1971	01 June 1978
(2) Senegal*	Ratification	08 March 1972	01 June 1978
(3) Madagascar	Ratification	27 March 1972	01 June 1978
(4) Malawi	Accession	16 May 1972	01 June 1978
(5) Cameroon*	Accession	15 March 1973	01 June 1978
(6) Chad*	Accession	12 February 1974	01 June 1978
(7) Togo*	Ratification	28 January 1975	01 June 1978
(8) Gabon*	Accession	06 March 1975	01 June 1978
(9) United States of America	Ratification	26 November 1975	01 June 1978
(10) Germany, Federal Republic of**	Ratification	19 July 1976	01 June 1978
(11) Congo*	Accession	08 August 1977	01 June 1978
(12) Switzerland**	Ratification	14 September 1977	01 June 1978
(13) United Kingdom**	Ratification	24 October 1977	01 June 1978
(14) France**	Ratification	25 November 1977	01 June 1978
(15) Soviet Union	Ratification	29 December 1977	01 June 1978
(16) Brazil	Ratification	09 January 1978	01 June 1978
(17) Luxembourg**	Ratification	31 January 1978	01 June 1978
(18) Sweden**	Ratification	17 February 1978	01 June 1978
(19) Japan	Ratification	01 July 1978	01 October 1978
(20) Denmark	Ratification	01 September 1978	01 December 1978
(21) Austria**	Ratification	23 January 1979	23 April 1979
(22) Monaco	Ratification	22 March 1979	22 June 1979
(23) Netherlands**	Ratification	10 April 1979	10 July 1979
(24) Romania	Accession	23 April 1979	23 July 1979
(25) Norway	Ratification	01 October 1979	01 January 1980
(26) Liechtenstein**	Accession	19 December 1979	19 March 1980
(27) Australia	Accession	31 December 1979	31 March 1980
(28) Hungary	Ratification	27 March 1980	27 June 1980
(29) Democratic People's Republic of Korea (North Korea)	Accession	08 April 1980	08 July 1980
(30) Finland	Ratification	01 July 1980	01 October 1980
(31) Belgium**	Ratification	14 September 1981	14 December 1981

*Members of African Intellectual Property Organization (OAPI) regional patent system. Only regional patent protection is available for OAPI Member States. A designation of any State is an indication that all OAPI States have been designated. Note: only one designation fee is due regardless of the number of OAPI member states designated.

**Members of European Patent Convention (EPC) regional patent system. Either national patents or European patents for member States are available through PCT, except for France and Belgium, for which only European patents are available if PCT is used. If regional protection is desired for one or more States, the indication "regional patent" must follow the designation of the State or States. Note: only one designation fee is due if the regional patent protection is sought for several States.

(ii) whether or not the international application as filed is accompanied by a power of attorney (i.e., a document appointing an agent or a common representative), a copy of a general power of attorney, a priority document, a document relating to the payment of fees, and any other document (to be specified in the check list);

(iii) [No change]

(b) [No change]

3.4 [No change]

Rule 4
The Request (Contents)

4.1 *Mandatory and Optional Contents: Signature*

(a) [No change]

(b) [No change]

(c) The request may contain

(i) indications concerning the inventor where the national law of none of the designated States requires that the name of the inventor be furnished at the time of filing a national application,

(ii) a request to the receiving Office to transmit the priority document to the International Bureau where the application whose priority is claimed was filed with the national Office or intergovernmental authority which is the receiving Office.

(d) [No change]

4.2 [No change]

4.3 [No change]

4.4 Names and Addresses

(a) [No change]

(b) [No change]

(c) Addresses shall be indicated in such a way as to satisfy the customary requirements for prompt postal delivery at the indicated address and, in any case, shall consist of all the relevant administrative units up to, and including, the house number, if any. Where the national law of the designated State does not require the indication of the house number, failure to indicate such number shall have no effect in that State. It is recommended to indicate any telegraphic and teleprinter address and telephone number of the agent or common representative or, in the absence of the designation of an agent or common representative in the request, of the applicant first named in the request.

(d) For each applicant, inventor, or agent, only one address may be indicated, except that, if no agent has been appointed to represent the applicant, or all of them if more than one, the applicant or, if there is more than one applicant, the common representative, may indicate, in addition to any other address given in the request, an address to which notification shall be sent.

4.5 [No change]

4.6 *The Inventor*

(a) [No change]

(b) If the applicant is the inventor, the request, in lieu of the indication under paragraph (a), shall contain a statement to that effect.

(c) [No change]

4.7 to 4.17 [No change]

SCHEDULE OF FEES

Fees	*Amounts*
1. Basic Fee: (Rule 15.2(a)) if the international application contains no more than 30 sheets	527 Swiss francs
if the international application contains more than 30 sheets	527 Swiss francs plus 11 Swiss francs for each sheet in excess of 30 sheets
2. Designation Fee (Rule 15.2(a))	127 Swiss francs
3. Handling Fee (Rule 57.2(a))	162 Swiss francs
4. Supplement to the Handling Fee (Rule 57.2(b))	162 Swiss francs
Surcharges	
5. Surcharge for late payment: (Rule 16*bis*.2(a))	Minimum: 200 Swiss francs Maximum: 500 Swiss francs

IV. Modifications of the administrative instructions under the PCT

MODIFICATION

The Director General of the World Intellectual Property Organization has modified the Administrative Instructions under the PCT pursuant to Rule 89.2 of the PCT Regulations as set out below.

Table of Modifications

Section 201	modified*
Section 202	modified*
Section 203	modified*
Section 206	deleted*
Section 208	new**
Section 209	new**
Section 503	modified*
Section 505	modified*
Section 507	modified*

*With effect on and from October 1, 1981.
**With effect on and from August 6, 1981

Section 201

Names of States: Cancellation of Designations

(a) The name of any State referred to in the request shall be indicated either by the full name of the State or by a generally accepted short title which, if the indications are in English or French, shall be as appears in Annex A. If the name is inserted in the request by the applicant for the purpose of designating that State, the receiving Office, or the International Bureau where the receiving Office fails to do so, shall insert, preferably before the name of the State, the two-letter country code identifying the State, as appears in Annex B.

(b) [No change]

Section 202

Kind of Protection

(a) Where the applicant wishes his application to be treated in any designated State as an application not for a patent but for the grant of another kind of protection referred to in Article 43, he shall make the indication in the request referred to in Rule 4.12(a) by inserting the words "inventor's certificate," "utility certificate," "utility model" (or "petty patent" for Australia), "patent of addition," "certificate of addition," "inventor's certificate of addition" or "utility certificate of addition," or their equivalent in the language of the international application, immediately after the indication of the said State.

(b) Where, in respect of the designation of the Federal Republic of Germany, the applicant is seeking two kinds of protection under Article 44, he shall make the indication referred to in Rule 4.12(b) by inserting, immediately after the indication of the Federal Republic of Germany and in the language of the international application, one of the two following indications:

(i) "and utility model";

(ii) "and auxiliary utility model."

Section 203

Regional Patents

(a) If the applicant wishes to obtain a regional patent in respect of any designated State and the request form does not contain preprinted indications permitting the applicant to make the indication in the request referred to in Rule 4.1(b)(iv), the applicant shall make the said indication by inserting the words "regional patent," or their equivalent in the language of the international application, immediately after the indication of the said State or, where an indication has been made under Section 202, after that indication, provided that:

(i) where Article 4(1)(ii), third clause, applies, and not all the States party to the regional treaty have been designated, the international application shall be treated as if all those States had been designated and as if the designations of all such States contained the said words, whether the said designations contained an indication of the wish to obtain a regional patent or, according to Article 4(1)(ii), fourth clause, are to be treated as containing such indication;

(ii) where the national law of any designated State contains a provision as referred to in Article 45(2), the International Bureau shall, according to Article 4(1)(ii), fourth clause, treat the designation as if it contained the said words even where the applicant failed to indicate them.

(b) The applicant may, instead of the words "regional patent" referred to in paragraph (a), use other words to the same effect; such words may include a reference to a patent to be granted by the European Patent Office under the Convention of the Grant of European Patents done at Munich on October 5, 1973 ("European patent"), where the regional patent which the applicant wishes to obtain is a European patent.

(c) An indication, in respect of the designation of Liechtenstein or Switzerland, or both, of the wish to obtain a regional patent shall be taken as indicating a wish to obtain a European patent in respect of those States, whereas the absence of any indication of the wish to obtain a regional patent in respect of such a designation shall be taken as indicating a wish to obtain a patent granted by the Swiss Intellectual Property Office in respect of those States.

Section 206

[Deleted]

Section 208

Application of Moneys Received by the Receiving Office in Certain Cases: Charging of Deficiency to the International Bureau

(a) A receiving Office which has not excluded the operation of Rules 16*bis*.1 and 16*bis*.2 shall, to the extent that it has received instructions from the applicant as to the fees to which it shall apply moneys received by it from the applicant, apply those moneys accordingly.

(b) Where a receiving Office referred to in paragraph (a) receives moneys from the applicant which, together with any other moneys so received, are not sufficient to cover in full the transmittal fee (if any), the international fee and the search fee (if any), the receiving Office shall, to the extent that it has not received instructions from the applicant as to the fees to which it shall apply the moneys which are available for the purposes, apply those moneys in payment, successively, of the fees set out below to the extent that they are due and unpaid and in the order in which they appear below:

(i) the transmittal fee;

(ii) the basic fee part of the international fee;

(iii) the search fee;

(iv) the designation fee part of the international fee.

(c) Where, pursuant to paragraph (b), the receiving Office applies moneys in payment of the designation fees, it shall apply them to those fees successively in the order in which the designations appear in the international application up to and including the last designation, the fee for which is fully covered by the moneys.

(d)(i) When notifying the International Bureau pursuant to Rule 16*bis*.1(d) as to amounts charged to that Bureau pursuant to Rule 16*bis*.1(a) and/or Rule 16*bis*.1(b), the receiving Office shall, if it has received moneys from the applicant, inform that Bureau of the fees to which those moneys have been applied and the fees which it has charged to the International Bureau. The receiving Office shall, where applicable, indicate the designations (if any) for which the fees were paid by moneys (if any) so received and the designations for which the fees were charged to the International Bureau.

(ii) Where moneys have been applied by the receiving Office in accordance with an instruction received from the applicant as mentioned in paragraph (a), the receiving Office shall inform the International Bureau as to the effect of the said instruction, preferably by sending the International Bureau a copy of a written communication received from the applicant.

Section 209

Indications as to Deposited Microorganisms on a Separate Sheet

(a) To the extent that any indication with respect to a deposited microorganism is not contained in the description, it may be given on a separate sheet. Where any such indication is so given, it shall preferably be on the form provided in Annex F as form PCT/RO/134 and, if furnished at the time of filing, the said form shall, subject to paragraph (b), preferably be attached to the request and referred to in the Check List referred to in Rule 3.3(a)(ii).

(b) For the purposes of the Japanese Patent Office, when Japan is designated, paragraph (a) applies only to the extent that the said form or sheet is included as one of the sheets of the description of the international application at the time of filing.

Section 503

Method of Identifying Documents Cited in the International Search Report

Identification of any document cited in the international search report referred to in Rule 43.5(b) shall be made by indicating the following elements in the order in which they are listed:

(a) *In the case of any patent document* (patent documents being patents within the meaning of Article 2(ii) as well as published applications relating thereto):

(i) [no change]

(ii) [no change]

(iii) [no change]

(iv) the name of the patentee or applicant (in capital letters, where appropriate abbreviated);

(v) the date of publication of the cited patent document as indicated thereon; and

(vi) where applicable, the pages, columns or lines where the relevant passages appear, or the relevant figures of the drawings.

(The following example illustrates the citation of a patent document according to paragraph (a) above: JP, B, 50–14535 (NCR CORPORATION) 28 May 1975 (28.05.75), see column 4, lines 3 to 27).

(b) [No change]

(c) [No change]

(d) [No change]

Section 505

Indication of Citations of Particular Relevance in the International Search Report

(a) Where any document cited in the international search report is of particular relevance, the special indication required by Rule 43.5(c) shall consist of the letter(s) "X" and/or "Y" placed next to the citation of the said document.

(b) Category "X" is applicable where a document is such that when taken alone, a claimed invention cannot be considered novel or cannot be considerd to involve an inventive step.

(c) Category "Y" is applicable where a document is such that a claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

Section 507

Manner of Indicating Certain Special Categories of Documents Cited in the International Search Report

(a) [No change]

(b) [No change]

(c) Where any document cited in the international search report is not considered to be of particular relevance requiring the use of categories "X" and/or "Y" but defines the general state of the art, it shall be indicated by the letter "A" placed next to the citation of the said document.*

*(see III, 3.14 of the Guidelines for International Search to be Carried Out under the PCT)

(d) [No change]

(e) [No change]

(f) Where in the international search report any document is cited for reasons other than those referred to in paragraphs (a) to (e), for example:

—a document which may throw doubt on a priority claim,*

—a document cited to establish the publication date of another citation,**

such document shall be indicated by the letter "L" next to the citation of the document and the reason for citing the document shall be given.

*(see VI, 4.3 of the Guidelines for International Search to be Carried Out under the PCT)

**(see VI, 6.2 of the Guidelines for International Search to be Carried Out under the PCT)

(g) Where a document is a member of a patent family*, it shall, whenever feasible, be mentioned in the international search report in addition to the one cited belonging as well to this family and should be preceded by the sign ampersand (&). A document whose contents have not been verified by the search examiner but are believed to be substantially identical with those of another document which the search examiner has inspected, may be cited in the international search report in the abovementioned manner indicated for patent family members.**

*(see VI, 3.2 of the Guidelines for International Search to be Carried Out under the PCT)

**(see VI, 5.2 of the Guidelines for International Search to be Carried Out under the PCT)

V. *Revised Request form PCT/RO/101*

The Request form for an international application filed under the PCT has been revised by WIPO. A copy of the revised form is reproduced on the following pages. Full size copies are available free of charge from the Patent and Trademark Office. Requests should be sent to the Commissioner of Patents and Trademarks, Box PCT, Washington, D.C. 20231, or by calling 703/557–2003. The current unrevised request forms may be used until March 1, 1982.

VI. *Completed sample revised Request form*

A revised Request form which has been completed so that it may be used as a guide has been included at the end of this notice.

Oct. 27, 1981.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

4,308,897

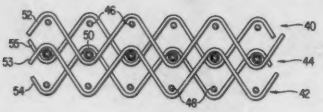
DRYER FELT WITH ENCAPSULATED, BULKY CENTER YARNS

William T. Westhead, Waycross, Ga., assignor to Scapa Dryers, Inc., Waycross, Ga.

Continuation-in-part of Ser. No. 932,360, Aug. 9, 1978, Pat. No. 4,274,448. This application Aug. 7, 1979, Ser. No. 64,365

Int. Cl.[3] D03D *15/00*

U.S. Cl. 139—383 A 25 Claims



1. A dryer felt comprising: a plurality of machine direction and cross machine direction yarns interwoven to provide a multiple-plane fabric having at least a base plane, a top plane and an intermediate plane positioned between said base plane and said top plane; said base plane defined by a first plurality of said cross machine direction yarns; said top plane defined by a second plurality of said cross machine direction yarns; and said intermediate plane defined by a third plurality of said cross machine direction yarns, wherein a plurality of the yarns of said third plurality are encapsulated yarns so as to provide a soft, bulky intermediate plane, each of said encapsulated yarns comprising a straight, twistless monofilament core that has no turns about its axis per unit of length, and a sheath completely surrounding the full length of said core, said monofilament core being a bundle of filaments treated with a heat resistant resin.

4,308,898

SLIDE FASTENER TAPE

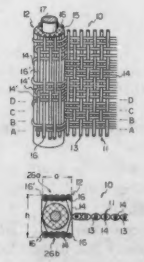
Yoshiharu Yamaguchi, Namerikawa, and Mitsuo Horikawa, Kurobe, both of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Mar. 20, 1980, Ser. No. 132,290

Claims priority, application Japan, Mar. 4, 1979, 54/44366[U]

Int. Cl.[3] D03D *3/00*

U.S. Cl. 139—384 B 4 Claims



1. A slide fastener tape to which fastener elements are to be secured to the tape along one of the longitudinal edges thereof by clamping the edge with the upper and lower legs of each of the fastener elements, the slide fastener tape comprising a tape body formed by interlaced warp ends and weft picks, a core member disposed along said one longitudinal edge of said tape body, and upper and lower groups of appendant warp ends, each group consisting of a plurality of appendant warp ends disposed on only the respective upper and lower sides of said core member, said weft picks of the tape body being interlaced with said plurality of appendant warp ends disposed on the upper and lower sides of the core member to form a circular weave, thereby forming a beaded edge to which the fastener elements are to be secured having a cross section generally rectangular with a height greater than the width.

4,308,899

METHOD AND INSTALLATION OF FILLING BUNKERS BY MEANS OF LIFTING BINS

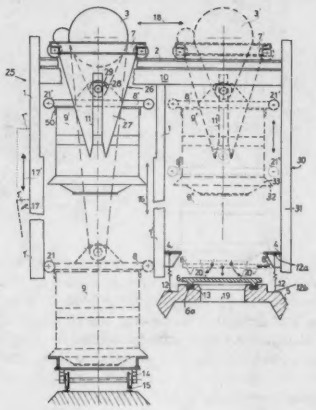
Norbert Misik, Vienna, Austria, assignor to Waagner-Biro Aktiengesellschaft, Austria

Filed Dec. 5, 1979, Ser. No. 100,542

Claims priority, application Austria, Dec. 20, 1978, 9090/78

Int. Cl.[3] B65B *3/06, 37/02;* B67C *3/34*

U.S. Cl. 141—1 12 Claims



1. A method for filling bins with bulk material contained within a vessel and, in particular, for filling cooling bins with hot coke, comprising the steps of:

locking the material containing vessel to hoisting apparatus;

hoisting the hoisting apparatus and vessel locked thereto in a vertically extending fixed guide so that the vessel is accurately guided during the hoisting thereof;

at the substantial end of the movement of the hoisting apparatus within the fixed guide, introducing the hoisting apparatus into a movable guide assembly;

moving the guide assembly with hoisting apparatus and vessel associated therewith in a transverse direction until it is located substantially vertically over the inlet opening of the bin and so that the vessel is accurately guided during the transverse movement thereof;

with the guide assembly stationary, lowering the hoisting apparatus and vessel until the latter is mounted on stationary support directly above the bin inlet opening, said lowering being conducted with the hoisting apparatus maintained within the movable guide assembly so that the vessel is accurately guided during the lowering thereof;

unlocking the bin inlet opening; and

opening the vessel discharge opening whereby the contents of the vessel fill the bin.

4,308,900

CONTAINER FILLING SYSTEM

Leslie Vadas, Los Gatos, Calif., assignor to FMC Corporation, San Jose, Calif.

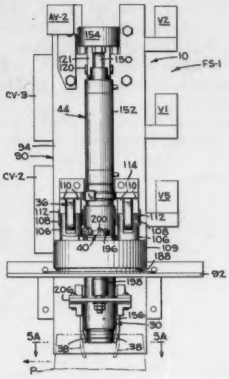
Filed Feb. 1, 1980, Ser. No. 117,709

Int. Cl.[3] B65B *3/10*

U.S. Cl. 141—1 27 Claims

10. A method of filling containers with a product from a filling valve which includes a cylinder with an inlet port and a discharge port therein, and a plunger movable between port openings and port closing positions: said method including the

steps of moving a container into a filling station, moving the plunger to a position opening the inlet and discharage ports, forcing a measured amount of product into the container through said ports, moving the plunger into port closing position to push product remaining in the cylinder into the container, and directing steam through said plunger and discharge port while the product is being moved into the container for purging air from the product and container and for cleaning product from the end of the plunger after closing the ports.

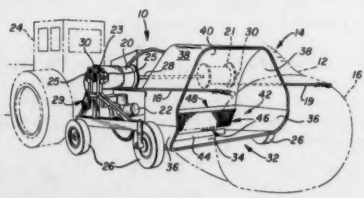


4,308,901

AGRICULTURAL BAG LOADING APPARATUS BRAKING MECHANISM

Richard H. Lee, Astoria, Oreg., assignor to AG-Bag Corporation, Arlington, Nebr.

Filed Jan. 25, 1980, Ser. No. 115,440
Int. Cl.³ B65B *1/04*
U.S. Cl. 141—114 **15 Claims**



1. An improved brake mechanism for deploying the attachment means between the filled end of an agricultural bag and an agricultural bag loading apparatus in response to the loading of material into said agricultural bag, said improvement comprising:

drum means rotatably mounted on said loading apparatus, said drum means deploying the attachment means upon rotation of said drum means in one direction;

a disc brake rotor means forming one end of said drum means;

disc brake caliper means attached to said loading apparatus; and

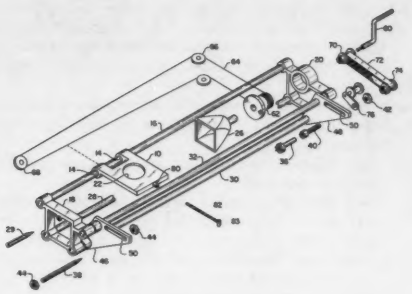
actuation means causing said disc brake caliper means to resist motion between said disc brake caliper means and said disc brake rotor means.

4,308,902

DUPLICATING APPARATUS WITH VARIABLE SCALE FACTOR

Jeffrey H. Goldman, 41 Pine Brook La., West Hartford, Conn. 06107

Filed Feb. 19, 1980, Ser. No. 122,013
Int. Cl.³ B27C *5/10*; B23B *5/46*
U.S. Cl. 142—7 **3 Claims**



1. An apparatus for duplicating a master object which comprises:

a frame, a first means cooperating with said frame for holding an associated work piece and rotating the work piece about a first axis, second means cooperating with said frame for holding an associated master object and rotating the master object about a second axis, a pivoting member carried on said frame for pivotal motion about a third axis which is generally parallel to said first axis and said second axis, a follower carried on said pivoting member in spaced relationship from said third axis, said follower engaging the associated master object and pivoting said pivoting member responsive to the contours of said master object, a router carried on said pivoting member in spaced relationship from both said follower and said third axis, said router including a tool disposed for engagement with the associated work piece, means for mounting said follower to allow translating motion along a path which is generally parallel to said first axis, means for varying the distance between said second axis and said path, and means for rotating the master object and the work piece.

4,308,903

SLIDING LOG SPLITTER DEVICE

Joseph R. Alloway, 11 Great Woods Dr., Trenton, N.J. 08618

Filed Aug. 21, 1980, Ser. No. 180,079
Int. Cl.³ B27L *7/00*
U.S. Cl. 144—193 C **1 Claim**

1. A sliding log splitter device comprising:

(a) a wedge means adapted to be forcibly inserted into a wooden log to cause splitting thereof, said wedge means including an abutment surface and a splitting edge;

(b) a shaft member being fixedly secured with respect to said abutment surface of said wedge means and extending upwardly and outwardly therefrom, said shaft member being solid and of generally cylindrical cross-section;

(c) an annular member being generally cylindrically shaped and longitudinally hollow and defining a longitudinally extending central bore therein of a cross-sectional internal dimension greater than the cross-sectional external dimension of said shaft member to allow said shaft member to extend into said central bore to be slidably movable therealong with respect to one another and removable with respect to one another;

(d) a core member fixedly secured within said central bore to be selectively movable with respect to one end of said shaft member as said annular member is moved longitudi-

nally therealong with said central bore extending about said shaft member;

(e) a weight means detachably secured with respect to said annular member to control momentum to said annular member;

(f) a weight retaining bracket means to detachably secure said weight means with respect to said annular member;

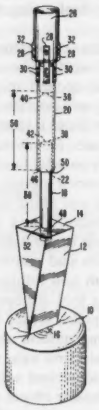
(g) a bracket securement means for securing said weight retaining bracket means with respect to said annular member, said bracket securement means also serving to secure said core member with respect to said annular member;

(h) a weight securement means for detachably securing said weight means with respect to said weight retaining bracket means;

(i) an upper impact means for transmitting the momentum of said weight means to said wedge means, said upper impact means comprising;

(1) a first upper impact surface comprising one end of said case member; and

(2) a second upper impact surface comprising an end of said shaft member opposite from the location of fixed securement with respect to said wedge means, said second upper impact surface adapted to be impacted by said first upper impact surface upon movement along said core member toward said wedge means;



(j) a lower impact means for transmitting the momentum of said weight means to said wedge means, said lower impact means comprising:

(1) a first lower impact surface comprising the end of said annular member opposite from the location of securement of said weight means; and

(2) a second lower impact surface comprising a surface of said wedge means, said second lower impact surface adapted to be impacted by said first lower impact surface upon movement of said annular member along said core member toward said wedge means, said first upper impact surface and said first lower impact surface being spaced from one another at a distance equal to the spatial separation between said second upper impact surface and said second lower impact surface to cause simultaneous contact of said upper impact means and said lower impact means to facilitate transfer of momentum from said weight means to said edge means; and

(k) a removable wedge spacer means positioned adjacent said wedge means and extending about said shaft member in contact with said abutment surface thereof, the side of said wedge spacer means opposite from said abutment surface providing said second lower impact surface, said wedge spacer means providing adjustment capabilities to maintain said second lower impact surface spaced apart at a distance equal to the spatial separation between said first upper impact surface and said first lower impact surface.

4,308,904

COLLAPSIBLE SOLUTION CONTAINER HAVING REDUCED COLLAPSE RATE AT THE END OF THE COLLAPSING PROCESS

Jerry D. Martin, Highland Park; Stephen J. Pearson, Ingleside; Gary A. Ward, Round Lake, all of Ill., and David A. Winchell, Twin Lakes, Wis., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 28,151, Apr. 9, 1979, Pat. No. 4,232,721. This application Mar. 3, 1980, Ser. No. 126,228

Int. Cl.³ B65D *1/02*

U.S. Cl. 150—0.5 **9 Claims**

1. In a molded, collapsible solution container, which container defines a chamber-defining body portion wall having an integral neck portion and a shoulder portion at one end thereof, said shoulder portion defining opposed shoulder edges and a pair of opposed lines of flexing weakness defined in said collapsible solution container and exhibiting a cross section which extends inwardly of said container, said opposed lines of flexing weakness being positioned on each side of the container generally parallel relation to said opposed shoulder edges, said opposed lines of flexing weakness being longitudinally spaced from the shoulder edges by a distance which is proportioned to cause said opposed lines of flexing weakness to enter into abutting relationship with one another as the container collapses inwardly about said opposed shoulder edges, whereby the abutting lines of flexing weakness inhibit further collapse of the container under the pressure of suction, to slow the rate of subsequent collapse.

4,308,905

COVER FOR AIR CONDITIONER

Nancy Gallagher, 1528 Larchmont Ave., Lakewood, Ohio 44107

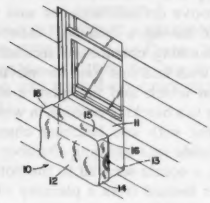
Filed Mar. 24, 1980, Ser. No. 133,608

Int. Cl.³ A47B *81/00*

U.S. Cl. 150—52 R **5 Claims**

1. A cover for an air conditioner or the like comprising a bottom wall, a pair of end walls and a pair of side walls, each of said end walls being secured to opposite ends of opposite spaced side walls to form an enclosure for the sides and ends of said conditioner, said cover end and side walls having peripheral hemming disposed therein forming a tunnel substantially around the end and side walls of said cover, at least one member threaded through said tunnel, the said member consisting of a pair of substantially U-shaped rod-like members, each threaded through a tunnel formed by a portion of the spaced side walls and an end wall and each member having a pair of

wound ends projecting outwardly into a recess formed in a wall of the cover interrupting the tunnel, fastening means



adapted to adjustably tighten the said member to securely lock the cover on the air conditioner.

4,308,906

NET-LIKE OR CHAIN-LIKE ANTI-SLIP DEVICE FOR A VEHICLE WHEEL

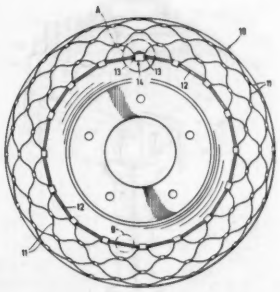
Karl Bula, Seuzach, and Bruno Schaffner, Oetwil am See, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Oct. 29, 1980, Ser. No. 201,817

Claims priority, application Switzerland, Nov. 6, 1979, 9951/79

Int. Cl.³ B60C *27/00*

U.S. Cl. 152—219 **10 Claims**



1. A net-like anti-slip device for fitting about a vehicle wheel, said device comprising

a resilient pull element extending over at least some of the wheel length;

a clamping wire extending peripherally of the wheel, said wire being secured to said pull element at an intermediate point of said wire and having two free ends disposed in overlapping relation; and

a clamping means receiving said free ends of said wire therein and being disposed diametrically opposite said intermediate point relative to the wheel, said clamping means including a first locking member having one of said wire ends extending therethrough and being movable between an inclined position relative to said one wire end clamping said one wire end therein while allowing movement in a sense of shortening the effective length of said wire and an upright position relative to said one wire end releasing said one wire end therefrom, a first release member for moving said locking member between said positions, a second locking member having the other of said wire ends extending therethrough and being movable between an inclined position relative to said other wire end clamping said other wire end therein while allowing movement in a sense of shortening the effective length of said wire and an upright position relative to said other wire end releasing said other wire end therefrom, and a second release member for moving said second locking member between said positions.

4,308,907

VEHICLE TIRE AND WHEEL CONSTRUCTION WITH SELECTIVE DEFORMABILITY

Renato Monzini, 16, Via Conte Verde, Milan, Italy (1-20158)

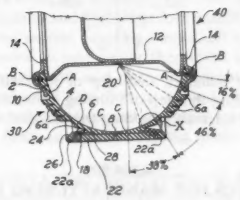
Continuation-in-part of Ser. No. 807,660, Jun. 17, 1977, Pat. No. 4,168,732. This application May 15, 1979, Ser. No. 39,385

Claims priority, application Italy, Feb. 12, 1979, 20114 A/79

The portion of the term of this patent subsequent to Sep. 25, 1996, has been disclaimed.

Int. Cl.³ B60C *13/00, 15/00*

U.S. Cl. 152—353 R **10 Claims**



1. An inflatable pneumatic tire and wheel construction for supporting a service load on a load area of a tire, having a tire annularly disposed around the wheel and engaged therewith to form an air space for pressurized air comprising:

a pair of undeformable side wall portions of the tire having inner edges engaged with the wheel;

a deformable side wall portion of the tire connected to outer edges of each of said undeformable side wall portions;

a restricted pliable wall portion of the tire connected to outer edges of each of said deformable side wall portions;

a belt portion of the tire connected between outer edges of said restricted pliable wall portions;

a tread carrying portion of the tire connected to the outer surface of said belt portion, the tread carrying portion having side projections extending axially outwardly of said belt portion with a cavity defined between each side projection and each of said restricted pliable wall portions respectively; and

a lateral restraining member connected to the wheel and extending over and in contact with each of said undeformable side wall portions for restraining the deformation thereof;

said restricted pliable wall portions resting on said side projections and closing said cavity at a load area of said tire when said tire is inflated and is under a service load at said load area.

4,308,908

METHODS AND APPARATUS FOR EFFECTING QUICK MANDREL CHANGES IN CONTINUOUS CASTING OPERATIONS

Gus Sevastakis, 5645 Angola Rd., Toledo, Ohio 43615

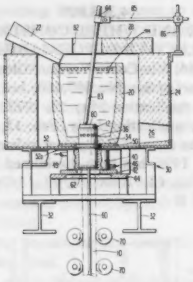
Filed Jan. 15, 1980, Ser. No. 112,239

Int. Cl.³ B22D *11/00*

U.S. Cl. 164—464 **4 Claims**

1. In the art of continuous vertical casting of tubular products utilizing a die and a mandrel within and supported by the die, and a crucible for holding molten metal to be cast with upper portions of said mandrel and die being received in the crucible and wherein one of said mandrel and die has flow passages for conveying molten metal from the crucible to the space between the mandrel and the die, the method comprising the steps of providing a releasable mandrel within and supported by said die to permit removal of the mandrel from the die while the die remains installed for continuous casting,

continuously casting molten metal introduced from the crucible between the mandrel and the die, and releasably holding the mandrel within the die by means of a tool engageable with

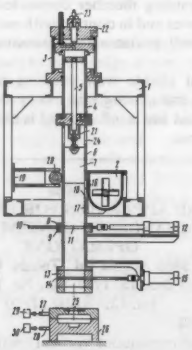


the top of the mandrel, said step of releasably holding the mandrel including the step of utilizing a thermocouple device as the tool for releasably holding the mandrel within the die.

4,308,909
APPARATUS FOR MANUFACTURING FOUNDRY CORES

Vitaly A. Zitser, ulitsa Pervomaiskaya, 9/4, kv. 17, Dolgoprudny Moskovskoi oblasti; Alexandr V. Melnikov, ulitsa Dorozhnaya, 7, korpus 1, kv. 138, Moscow; Leonid V. Bachelis, Schelkovskoe shosse, 91, korpus 2, kv. 221, Moscow; Nikolai K. Shishkin, ulitsa Yablochkova, 29, kv. 17, Moscow; Jury E. Morozov, Leninsky prospekt, 39/1, kv. 264, Moscow; Vladimir A. Ivanov, ulitsa Rustaveli, 3, korpus 6, kv. 34, Moscow; Semen A. Olshansky, Dmitrovskoe shosse, 37, kv. 306, Moscow; Igor I. Dreishev, Volgogradsky prospekt, 181, kv. 33, Moscow; Eduard A. Stolyar, Krasnostudenchesky proezd, 19, kv. 8, Moscow; Vladimir S. Kushelman, Proletarsky prospekt, 83, kv. 12, Moscow; Eduard G. Shartner, ulitsa Krylova, 4a, kv. 21, Karaganda; Vladimir D. Abaskalov, bulvar Mira, 47, kv. 30, Karaganda, and Vladimir A. Levinson, ulitsa N. Abdirova, 46/2, kv. 47, Karaganda, all of U.S.S.R.

Filed Aug. 24, 1979, Ser. No. 69,524
Int. Cl.³ B22D *13/16, 15/08*
U.S. Cl. 164—207 **6 Claims**

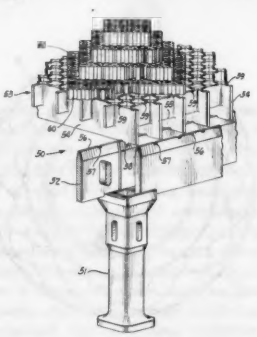


1. An apparatus for manufacturing foundry cores from fluid sand, comprising a supporting frame, a mixer mounted on said supporting frame for mixing said sand, a batching chamber adapted to receive sand from said mixer, a mechanism for moving said batching chamber having an external ram operatively associated with said batching chamber, a mechanism for pressing said sand having an internal ram housed within said external ram, a first actuator mounted on said supporting frame for actuating said mechanisms, said first actuator supporting said mechanism for moving said batching chamber, said batching chamber being secured to said external ram and having interconnected top and bottom parts, said batching chamber having a first groove defined between said top and bottom parts, a first gate having a first port mounted in said first groove of said batching chamber, a second actuator operatively associated with said first gate for moving said first gate from a position in which said first port is aligned with said batching chamber to a blocking position in which said first port is out of alignment with said batching chamber, a pressing plunger housed inside said batching chamber and attached to said internal ram, a nozzle secured to the bottom part of said batching chamber formed from a plurality of interconnected elements defining a second groove, a second gate having a second port mounted in said second groove of said plurality of interconnected elements, and a third actuator operatively associated with said second gate for moving said second gate from a position in which said second port is aligned with said batching chamber to a position in which said second port is out of alignment with said batching chamber.

4,308,910
CHECKERWORK SUPPORTING MEANS

George L. Balke, Cleveland, and Edward F. Jablonski, Brecksville, both of Ohio, assignors to Davy Inc., Cleveland, Ohio

Division of Ser. No. 757,638, Jan. 7, 1977, Pat. No. 4,150,717.
This application Oct. 19, 1978, Ser. No. 952,854
Int. Cl.³ F28D *17/00*
U.S. Cl. 165—9.3 **4 Claims**



1. In a regenerative heating stove embodying a checkerwork having bottom surface means, supporting structure for the checkerwork comprising apertured substantially laterally extending lower supporting means having laterally extending upper surface means; laterally extending intermediate supporting means, formed of apertured metal and having upper and lower laterally extending surface means one of which surface means contacts one of said bottom surface means of said checkerwork and said upper surface means of said lower supporting means, said intermediate supporting means being supported by said lower supporting means for limited slidable movement thereon and adapted to support said checkerwork, said intermediate supporting means comprises a single layer of apertured metal and in which the surface means of said intermediate supporting means that contacts said checkerwork is finished substantially more smoothly than the surface means of said intermediate supporting means that contacts said lower supporting means, to reduce friction and permit preferential sliding between at said surface means of said checkerwork and said surface means of between said intermediate supporting means, in comparison to the sliding between the surface means of between said intermediate supporting means and the surface means of said lower supporting means, when dimensional

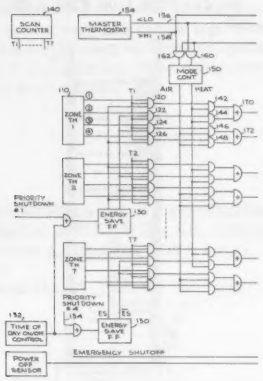
changes occur in said checkerwork and supporting structure because of temperature changes.

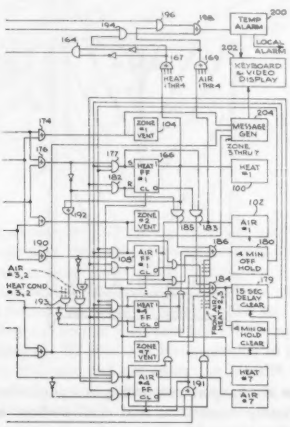
4,308,911

RESIDENTIAL MONITORING AND CONTROL SYSTEM

William J. Mandl, 8303 Faust Ave., Canoga Park, Calif. 91303

Filed Nov. 13, 1979, Ser. No. 93,533
Int. Cl.³ F24F *3/00*; G08B *23/00*
U.S. Cl. 165—22 **7 Claims**





1. A system for use in combination with a residence having at least first and second zones and at least one actuable heat unit and one actuable air condition unit for respectively warming and cooling the air in said zones, said system comprising:

master thermostat means including temperature sensing means and means for defining an air condition mode when the temperature sensed by said sensing means is above a first selectable level and a heat mode when the temperature sensed by said sensing means is below a second selectable level;

a first zone thermostat means mounted in said first zone including temperature sensing means for indicating whether the temperature sensed thereby is in a first range below a first selectable level or in a second range between said first selectable level and a second selectable level or in a third range between said second selectable level and a third selectable level or in a fourth range above said third selectable level;

a second zone thermostat means mounted in said second zone including temperature sensing means for indicating whether the temperature sensed thereby is in a first range below a first selectable level or in a second range between said first selectable level and a second selectable level or in a third range between said second selectable level and a third selectable level or in a fourth range above said third selectable level;

operating means for selectively defining either a normal operating mode or an energy save operating mode;

first coupling means actuable to selectively couple said heat and air condition units to said first zone;

second coupling means actuable to selectively couple said heat and air condition units to said second zone;

means responsive to said master thermostat means defining said heat mode and said operating means defining said energy save mode and said first or second zone thermostat means indicating said first range for respectively actuating said first and second coupling means and said heat unit;

means responsive to said master thermostat means defining said heat mode and said operating means defining said normal mode and said first or second zone thermostat means indicating said second range for respectively actuating said first and second coupling means and said heat unit;

means responsive to said master thermostat means defining said air condition mode and said operating means defining said normal mode and said first or second zone thermostat means indicating said third range for respectively actuating said first and second coupling means and said air condition unit; and

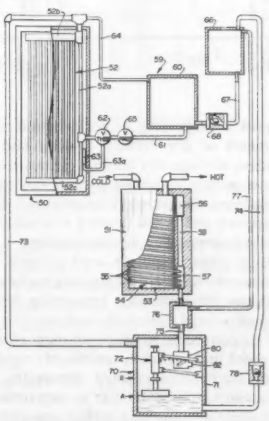
means responsive to said master thermostat means defining said air condition mode and said operating means defining said energy save mode and said first or second zone thermostat means indicating said fourth range for respectively actuating said first and second coupling means and said air condition unit.

4,308,912

HEAT TRANSFER SYSTEM

Bernath L. Knecht, 481 Pittsfield Dr., Worthington, Ohio 43085

Filed Mar. 28, 1979, Ser. No. 24,878
Int. Cl.³ F28D *15/00*; G05D *23/00*
U.S. Cl. 165—32 **11 Claims**



1. A heat transfer system utilizing a volatile fluid heat transferring medium comprising

a fluid evaporator in heat receiving relationship with a heat source and operable to vaporize volatile fluid contained

therein in a liquid state in response to receipt of heat from the heat source,

a fluid condenser in heat transferring relationship with a heat utilizing device and operable to condense vaporized fluid contained therein to a liquid state as a consequence of transferring heat to the utilizing device,

fluid conduit means interconnecting said evaporator and said condenser for enabling interflow of fluid therebetween, said conduit means including a storage accumulator for the fluid in a liquid state, first valve means selectively operable in response to a parameter of the fluid in the system to alternatively permit liquified fluid to flow through said conduit means to said evaporator or to prevent such flow and cause the liquified fluid flowing from said condenser to be retained in said storage accumulator, said valve means being responsive to the fluid parameter in controlling operation of the system whereby the temperature of the utilizing device is prevented from exceeding a predetermined maximum value, and a thermostatic valve interposed therein between said evaporator and said storage accumulator in flow controlling relationship, said thermostatic valve being responsive to the temperature of said evaporator and operative to permit fluid flow therethrough when the temperature of said evaporator exceeds a predetermined minimum magnitude.

4,308,913

COOLING TOWER WITH ELEVATED HEAT EXCHANGER ELEMENTS SUPPORTED ON GIRDERS

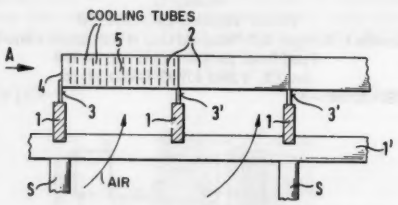
Hermann Heeren, Nuremberg, and Dietrich Richter, Neustadt, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Nuremberg, Fed. Rep. of Germany

Filed Jul. 20, 1979, Ser. No. 59,302

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1978, 2832498

Int. Cl.³ F28F *9/00*

U.S. Cl. 165—68 **2 Claims**



1. A support arrangement in combination with heat exchanger elements of dry cooling towers, said dry cooling towers including air/tube dry cooling elements of rectangular or square cross-section including vertical tubes all having air flowing unhindered therethrough as arranged directly above transverse supports and liquid flowing externally of the tubes, said arrangement comprising in combination:

a plurality of girder members with at least some of said girder members having a supporting surface; and

support means for vertically supporting heat exchanger elements associated therewith, said support means being operatively connected to heat exchanger elements belonging therewith and vertically unshiftably rigidly connected to girder members associated therewith, said support means extending perpendicular to supporting surfaces of girders having a supporting surface associated therewith, and said support means having a high flexibility in bending for permitting free expansion or contraction of heat exchanger elements arranged therewith wherein said support means includes stilts and wherein said plurality of girders is arranged in a lattice-type support structure, said support structure being provided at a predetermined vertical height.

4,308,914

DOUBLE PLATE FLOW DISTRIBUTOR

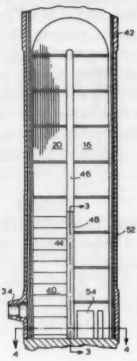
Anthony Ruhe, 1310 Pelham Rd., Box 791, Fonthill, Ontario, Canada (L0S 1E0), and James H. D. NIckerson, 414 Gowland Cres., Milton, Ontario, Canada (L9T 4E4)

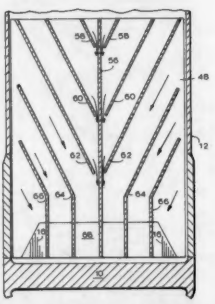
Filed May 3, 1979, Ser. No. 35,872

Claims priority, application Canada, Mar. 19, 1979, 323743

Int. Cl.³ F22B *1/06*; F28F *9/22*

U.S. Cl. 165—160 **6 Claims**





1. A heat exchanger, comprising a cylindrical section; a tubesheet rigidly secured to said shell section; a bundle of U-shaped tubes disposed within said shell section, said tubes including upflow and downflow legs connected to said tubesheet, said upflow legs being spaced apart from said downflow legs so as to define a diametral tube-free zone therebetween; a cylindrical shroud disposed coaxially within said shell around said tube bundle said shroud together with said shell section defining an annular space therebetween; means for introducing a first fluid into said shell; means for removing said first fluid from said shell; means for passing said first fluid into said tube-free zone, said means for passing including a first plate extending through said zone and rigidly connected to said shroud along its side edges, said first plate being adjacent said downflow legs of said U-shaped tubes, a second plate extending through said zone and spaced away from said first plate, said second plate being adjacent said upflow legs of said U-shaped tubes and rigidly connected to said shroud, said second plate contacting the inner wall of said shell section at opposite ends thereof, and a plurality of ribs connected between said plates, said shroud being formed with openings therethrough

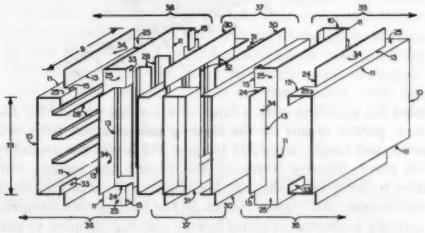
to permit passage of said first fluid from said annular space into said tube-free zone between said plates, said openings extending above and below at least one of said ribs to permit passage of said first heat exchange fluid into said tube-free zone above and below said one rib, said ribs including vertically extending sections connected to sloped sections sloping in a direction extending upwardly from the center of said heat exchanger toward said shell section, said vertical sections being spaced apart from one another so as to allow for distribution of said first fluid along the length of said tube-free zone and across said tubesheet therebelow, and means for directing said fluid from said tube-free zone toward said upflow legs of said U-shaped tubes, said means for directing including an opening formed in said second plate and extending substantially across the lateral expanse of said second plate.

4,308,915

THIN SHEET HEAT EXCHANGER

Nicholas A. Sanders, 1022C 27th Ave. SE., Minneapolis, Minn. 55414, and Horia A. Dinulescu, 1530 S. 6th St., Minneapolis, Minn. 55454

Filed Oct. 27, 1980, Ser. No. 200,927
Int. Cl.³ F28F *3/10*
U.S. Cl. 165—166 **18 Claims**



1. A heat exchange plate for use in a heat exchanger, said heat exchange plate being a plane surface rectangle having a pair of opposing sides folded so as to form by the said heat exchange plate sealing surfaces and a fluid flow channel,

each said folded side being formed of a first and second cut and a first and second fold, said first fold being a forward approximately 90° fold and being parallel to the edge of the said fold side and extending the breadth of the said heat exchange plate, said second fold being a backward approximately 90° fold and being parallel to the said first fold and extending between said first and second cuts.

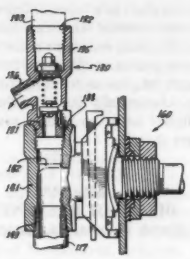
4,308,916

PITLESS CONNECTION INCORPORATING PRESSURE RELIEF VALVE

Richard R. Fritz, Jr., P.O. Box 903, Verdi, Nev. 89439

Filed Nov. 2, 1979, Ser. No. 90,739
Int. Cl.³ E21B *33/10, 34/08*
U.S. Cl. 166—86 **1 Claim**

1. A pitless adapter for a water well comprising a hollow tubular member having interior threads at each end; a passageway interconnecting to the interior of said hollow tubular member through a side wall of said tubular member; a pressure relief valve inserted in the threads at one end of said tubular member; a water pipe inserted in the threads of the other end of said tubular member; connection means connecting said tubular member to the interior of a water well casing; and means interconnecting with the opening through the wall of



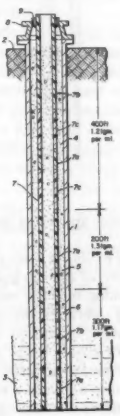
said tubular member to a water conduit on the exterior of said well casing.

4,308,917

BUOYANT TUBULARS AND METHOD FOR INSTALLING SAME IN A WELL BORE

Newton B. Dismukes, 2952 Buttonwood Dr., Carrollton, Tex. 75006

Continuation-in-part of Ser. No. 867,819, Jan. 9, 1978, abandoned. This application Aug. 15, 1979, Ser. No. 66,673
Int. Cl.³ E21B *17/00, 19/00*
U.S. Cl. 166—381 **15 Claims**



1. The method of installing an elongated shaft member in a well bore substantially filled with a liquid comprising the steps of:

(a) inserting into said well bore liquid a first shaft section having a density greater than the density of the liquid into which such shaft section is inserted;

(b) while supporting said first shaft section, joining to the upper end thereof a second shaft section having a density less than the density of the liquid into which such shaft is introduced;

(c) lowering said first and second shaft sections into said liquid;

(d) adding stepwise additional shaft sections to attain the desired shaft length, each shaft section added through the penultimate section being selected so as to have a density either greater or less than the density of the liquid in the well bore such that the average density of all of the sections already in the well bore plus the section being added

is slightly less than the average density of the well bore liquid whereby the upper end of the shaft as it is being formed remains slightly above the surface of the liquid in the well.

11. An elongated shaft in a liquid filled well bore comprising at least four sections some of which are less dense than the well liquid and some of which are more dense than the well liquid, said sections being joined in alternate end to end relationship and being of such lengths as to constitute a shaft having an average density substantially equal to the average density of the well bore liquid so as to render said shaft substantially neutrally buoyant therein.

4,308,918

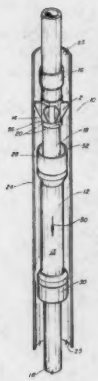
BLOWOUT PREVENTER

William N. Strickland, Houma, La., assignor to Bonnie Corp., Houma, La.

Continuation-in-part of Ser. No. 92,573, Nov. 8, 1979. This application Jul. 1, 1970, Ser. No. 165,224

Int. Cl.[3] **E21B** *33/06, 33/126, 33/128*

U.S. Cl. 166—326 **7 Claims**



1. A blowout preventer apparatus for use in drilling oil/gas wells comprising:

a. a length of casing having a casing bore placed at least in part within the bore of the oil/gas well being drilled;

b. a drill string extended into the well bore and penetrating during the drilling operation the casing bore;

c. a stop affixed during operation to said drill string and defining thereon an upper "stop" position; and

d. casing bore sealer means slideably mounted on said drill string below said stop between a lower "resting" and said upper "stop" positions for sealing at least a part of said casing bore during a well blowout condition responsive to upward movement of said seal means from said lower "resting" to said upper "stop" position, and said casing bore sealing means comprises at least in part a cylindrical seal shaft slideably movable on said drill string, said shaft having at its upper portion an expandable seal which expands during operation when said shaft rises responsive to a blowout condition and engages said stop.

4,308,919

HINGE-TYPE OFFSET WHEEL HARROW

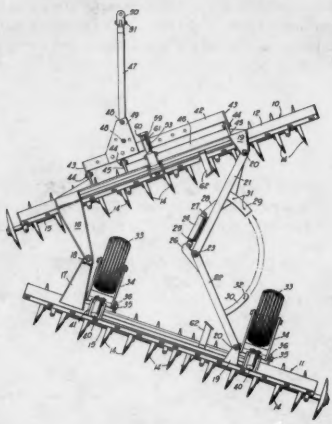
Samuel J. Coughran, Jr., Cedartown, Ga., assignor to Rome Industries, Inc., Cedartown, Ga.

Filed Jan. 4, 1980, Ser. No. 109,551

Int. Cl.[2] **A01B** *21/08, 63/22, 73/00*

U.S. Cl. 172—240 **4 Claims**

1. A harrow comprising leading and trailing harrow units, means pivotally coupling said units near corresponding ends thereof for relative angular adjustment, a toggle linkage interconnecting said units near the other ends of the units, power means connected with the toggle linkage to open and close it for adjusting the angle between said units and for drawing said units into substantially parallel relationship for transport, spaced transport wheels on the trailing unit substantially at right angles thereto and being pivotally attached to the trailing unit for vertical swinging movement for raising and lowering the trailing unit relative to the ground, power means connected with the transport wheels to swing them on their pivots, a drawbar and tongue assembly pivotally coupled with said leading unit for vertical swinging relative thereto, said tongue



adapted for coupling with a hitch of a towing vehicle for the harrow, power means on the leading unit coupled with said drawbar and tongue assembly to raise and lower the assembly on its pivot, thereby lowering and raising the leading unit relative to the ground through the reactive force of said hitch on said tongue, said power means on the leading unit comprising a single hydraulic cylinder having one end coupled to said drawbar and tongue assembly and its other end coupled to a rocker element which in turn is pivotally attached to said leading unit, and an adjustable stop element for the rocker element on said leading unit in the path of rocking movement of the rocker element.

4,308,920

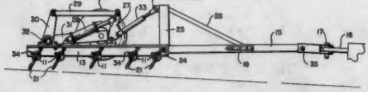
GROUND WORKING IMPLEMENT WHEREIN FORWARD FRAME PORTION RAISED BEFORE FRAME SUPPORT ENGAGES GROUND

Glenn L. Floyd, Findlay, and James A. McElwain, Kalida, both of Ohio, assignors to Remlinger Manufacturing Company, Kalida, Ohio

Filed Dec. 19, 1979, Ser. No. 105,189

Int. Cl.[3] **A01B** *19/04, 19/10, 73/00*

U.S. Cl. 172—328 **8 Claims**



1. A ground working implement comprising:

a frame carrying downwardly extending ground working means;

support means for said frame;

an upright lever arm pivotally connected to said frame between its forward and rear ends;

an adjustable link pivotally connected to the lower portion of said upright lever arm above the point of attachment of said upright lever arm to said frame and extending upwardly and forwardly;

a forward bell crank lever means having a forwardly extending arm adapted to be pivotally connected to a motive means, a fulcrum pivotally connected to a motive means, a fulcrum pivotally connected to a forward portion of said frame, and an upright arm of said forward bell crank lever means having an upper end pivotally connected to the upwardly and forwardly extending end of said adjustable link;

a selectively reciprocable power source connected at one end to said frame between the rear end of said frame and the point of attachment to said frame of said upright lever arm, and being pivotally connected at said other end to said upright lever arm between the point of attachment of said adjustable link to said upright lever arm and the upper end of said upright lever arm;

a rear bell crank lever means having a forwardly extending arm with a forward end connected to said support means for said frame, a fulcrum pivotally connected to a rear portion of said frame; and an upright arm of said rear bell crank lever means;

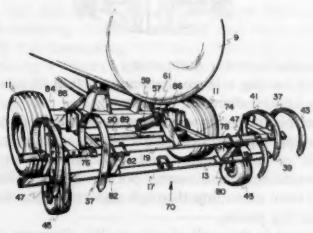
and a connecting link pivotally connected at its rear end to the upper end of said upright arm of said rear bell crank lever means and pivotally connected at its forward end to the upper end of said upright lever arm, said connecting link being of such length and the arms of said rear bell crank lever means being so relatively angularly positioned that upon actuation of said selectively reciprocal power source so as to cause forward motion of the upper portion of said upright lever arm the subsequent raising of the forward portion of said frame will occur prior to engagement of said support means for said frame with the ground.

4,308,921

GROUND TRACK OBLITERATING DEVICE

Donald A. Davis, Rte. No. 2, Box 328, Covington, Ind. 47932

Filed Sep. 27, 1979, Ser. No. 79,374
Int. Cl.[3] A01B *37/00, 63/102*
U.S. Cl. 172—488 **7 Claims**



1. A track obliterating device for a chemical applicator wagon, said device comprising:

a chemical applicator wagon having a rear portion and spaced ground engaging wheels;

a mounting frame;

a hitch connected with said mounting frame and having a forwardly extending portion adapted for connection to said rear portion of said chemical applicator wagon;

a plurality of groups of ground engageable elements mounted on said mounting frame with each group of said elements being positioned so that different ones of said groups of said elements are behind and substantially aligned with said wheels of said applicator wagon when said device is connected thereto in operating position whereby as said wagon is moved in a forwardly direction tracks created by said wheels of said applicator wagon are obliterated by said device; and

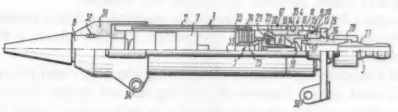
a second set of wheels attached to said mounting frame with different ones of said second set of wheels being ground engageable forwardly of and substantially aligned with said ground engageable elements and said wheels of said applicator wagon so that tracks created by said second set of wheels are obliterated along with obliteration of tracks created by said wheels of said applicator wagon.

4,308,922

IMPACT DEVICE

Alexandr A. Vikhlyaev, ulitsa Parkovaya, 16; Georgy M. Nosikov, ulitsa Gopolya, 17, kv. 55; Nikolai I. Semenov, ulitsa Sofiiskaya, 8, kv. 22, and Alexandr I. Fedulov, ulitsa Mechurina, 17, kv. 5, all of Novosibirsk, U.S.S.R.

Filed Jul. 6, 1978, Ser. No. 922,580
Int. Cl.[3] B23Q *5/033*
U.S. Cl. 173—18 **1 Claim**



1. An impact device comprising:

a cylindrical casing having a first end and a second end;

a compressed air line for air admission to the said cylindrical casing at the first end thereof;

a mechanism for automatically starting said device mounted to said cylindrical casing on the side of the first end thereof, compressed air being admitted to said cylindrical casing through said mechanism, said mechanism for automatically starting said device comprising a hollow two-step cylinder having a first end, a second end, an outer surface and an inner surface and secured with the first end thereof to the first end of said cylindrical casing, a two-step piston having an outer surface and an inner surface and mounted in said hollow cylinder in such a manner that an annular chamber is defined between said outer surface of said piston and said inner surface of said cylinder, the chamber communicating with said compressed air line, and a valve mounted in said piston and co-operating with said piston to cut-off compressed air supply to said cylindrical casing from said compressed air line;

a tappet mounted in said cylindrical casing downstream said valve in the path of flow of said compressed air to co-operate with said valve;

a control valve air distribution arrangement mounted in said cylindrical casing downstream said mechanism for automatically starting said device in the path of flow of said compressed air to co-operate with said tappet and said mechanism for automatically starting said device to distribute compressed air to said cylindrical casing;

a hammer piston mounted for reciprocations in said cylindrical casing under the action of compressed air admitted through said control valve air distribution arrangement;

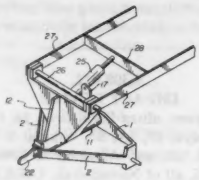
a working tool mounted in said cylindrical casing, said hammer piston acting on said working tool by imparting blows thereto; and

an annular collar disposed internally of said hollow two-step cylinder at a portion of said inner surface directly adjacent said control valve air distribution arrangement; said device being further defined by a shock absorber mounted between said annular collar and said tappet, through which said annular collar co-operates with said tappet; and a plurality of ports for admission of said compressed air to said control valve air distribution arrangement provided in said annular collar.

4,308,923
ACCU-PRESS

Robert E. Gilbert, 187 Western Ave., Buffalo, Wyo. 82834

Filed Dec. 11, 1979, Ser. No. 102,617
Int. Cl.[3] E21C *11/02*
U.S. Cl. 173—26 7 Claims



1. A device including a drilling auger removably attachable to and powered by a tractor type vehicle having power take-offs comprising in combination:

a lower frame member carried by the vehicle,

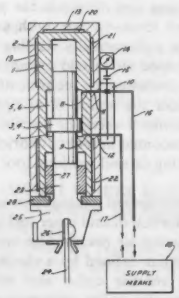
an upper frame member pivoted to said lower frame member having first means for controlled rotation about a first axis,

and a supporting framework carrying the auger and pivoted to said upper framework having second means for controlled rotation about a second axis orthogonal to said first axis whereby the auger is suitably supported and able to bore into earth at substantially any angle relative to a plane defined by the earth wherein said lower frame member forms substantially an isosceles triangle when viewed in a top plan view having truncated apices and said first axis extends from a midportion of a base of said lower frame member to an apex where two equal-length sides meet in which said truncated apices have outer faces which attach to the vehicle including: projecting pins on two apices proximate to said base and a plate bolted onto the remaining apex, said plate having a tongue-shaped snout for connection with said vehicle, said lower frame member disposed in a horizontal plane

4,308,924
HYDRAULIC VIBRATOR FOR MOVING A RAMMING AND DRAWING BODY AND A METHOD OF MOVING THE SAME

Kurt Boguth, Ratingen, Fed. Rep. of Germany, assignor to Tünkers Maschinenbau GmbH, Ratingen, Fed. Rep. of Germany

Filed Mar. 18, 1980, Ser. No. 131,362
Claims priority, application Fed. Rep. of Germany, May 3, 1979, 2917830
Int. Cl.[3] B23B *45/16;* B25D *9/00, 11/00, 13/00*
U.S. Cl. 173—135 14 Claims

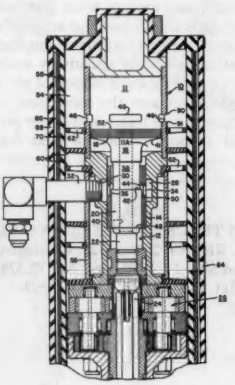


1. A hydraulic vibrator for moving a ramming and drawing body or the like, comprising a hydraulic working cylinder having an axis and an inner hollow; a double-acting working piston axially movable in said inner hollow of said hydraulic working cylinder, said working piston having two opposite axial end portions and subdividing said inner hollow of said cylinder into two cylinder chambers, said axial end portions of said piston having identical outer diameters and each extending into a respective one of said cylinder chambers, said cylinder chambers having identical inner diameters and being each provided with a through-going opening; and means for alternately supplying a working medium into said hydraulic working cylinder, alternately through said through-going openings into said cylinder chambers with feeding the working medium into one of said cylinder chambers and simultaneous withdrawal of the working medium from the other of said cylinder chambers, and vice versa, so that said working piston vibrates with selectively variable frequency and displaces a ramming and drawing body or the like.

4,308,925
PNEUMATIC IMPACT MOTOR

Louis H. Leblanc, Jr., Claremont, N.H., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Sep. 19, 1979, Ser. No. 77,246
Int. Cl.[3] B25D *9/18*
U.S. Cl. 173—136 5 Claims



1. A pneumatic motor comprising

a cylinder having a large diameter portion communicating with a smaller diameter portion,

a hammer piston reciprocable within said cylinder and having an upper portion disposed within said large diameter portion of the cylinder and a lower portion disposed within said smaller diameter portion of the cylinder,

a central bore extending through said upper and lower portions of the piston,

an input port in the wall of said smaller diameter portion of the cylinder adapted for connection to a source of fluid under pressure,

a reduced diameter area in the outer peripheral surface of said lower portion of the piston spaced above the lower end of said lower portion, said reduced diameter area being out of sliding engagement with the wall of said smaller diameter portion of the cylinder and being adapted in one position of said hammer piston to connect said input port and said source of fluid under pressure to a lower side of said upper piston portion to force it in an upward direction,

said input port in a second position of said hammer piston being connected through said central bore to the upper side of said large diameter piston portion to force it in the opposite direction, and

the length of said piston portion beneath said reduced area

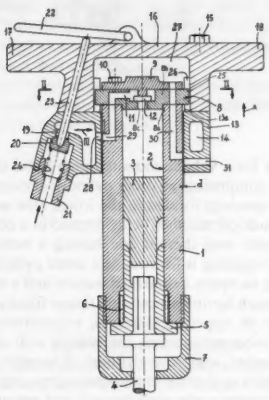
portion is such as to cut off communication between said inlet port and the lower side of said upper piston portion before communication is established between the inlet port and the upper side of said upper piston via said central bore.

4,308,926

PNEUMATICALLY CUSHIONED PERCUSSION APPARATUS

Roger Montabert, Bron, France, assignor to Etablissements Montabert S.A., Saint-Priest, France

Filed May 14, 1980, Ser. No. 149,648
Claims priority, application France, May 15, 1979, 79 13278
Int. Cl.³ F21B *3/00*
U.S. Cl. 173—162 R **5 Claims**



1. A pneumatic percussion apparatus comprising:
a body forming a cylinder;
a ram reciprocatable pneumatically in said cylinder;
means for mounting a tool adapted to be impacted by said ram at one end of said body; and
a shock-damping assembly on the opposite end of said cylinder, said assembly being mounted on said other end of said body and defining an annular clearance therewith and a shock-damping chamber between said body and said assembly communicating with said clearance, said assembly comprising a valve connectable to a source of compressed air for feeding a distribution system in said body for reciprocating said ram across said clearance, said body being provided with a passage communicating with said chamber and registerable with a vent in said assembly for establishing an equilibrium between compressed air fed to said chamber through said clearance and air discharged from said chamber through said passage.

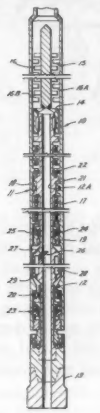
4,308,927

WELL DRILLING TOOL

Fred K. Fox, Austin, Tex., assignor to Engineering Enterprises, Inc., Houston, Tex.

Filed Apr. 1, 1980, Ser. No. 136,358
Int. Cl.³ E21B *4/02*
U.S. Cl. 175—107 **3 Claims**

1. A well drilling tool, comprising a body including inner and outer tubular members arranged concentrically of one another to provide an annular space therebetween and adapted to be connected as part of a drill string within a well bore, bearing means within the annular space to support the members for rotation with respect to one another, means sealing between the members above and below the bearing means so as to form a lubricant chamber in which the bearing means is contained, the bore of the inner member being open to the space above the lubricant chamber, whereby drilling fluid circulated downwardly through the drill string is directed into the bore for circulation therethrough and out the lower end of a bit on the lower end of the drill string, a port connecting the bore with the space below the lubricant chamber, a sleeve extending longitudinally downwardly within the space to a level beneath the lower end of the outer tubular member, a flange on the sleeve which faces a shoulder on one of said tubular members, bolts extending through the flange and threaded into tapped holes formed in the shoulder, to connect the sleeve to said one tubular members for rotation therewith, means sealing between said sleeve and said one tubular member, a face seal comprising a first ring carried by said sleeve for



rotation therewith, a second ring carried by the other tubular member for rotation therewith, said rings having annular end faces which are disposed for sliding over one another during relative rotation of the tubular members, and a spring acting between an end wall of said sleeve and the first ring for yieldably urging the end face of the first ring against the end face of the second ring, the distance between given points along the lengths of said sleeve and outer tubular member, and thus the spacing between said end wall and end face of said first ring, being observable and measurable from the exterior of the tool, and shims removably disposable within an exteriorly accessible space between said flange and shoulder so that a selected number thereof may be held tightly therebetween in order to adjust said spacing and thus the force of the spring.

4,308,928

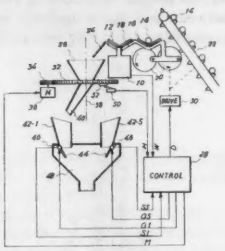
AUTOMATIC COMBINATION WEIGHING MACHINE

Yashushi Oshima, Akashi, Japan, assignor to Yamato Scale Company Limited, Hyogo, Japan

Filed Jun. 30, 1980, Ser. No. 164,315
Int. Cl.³ G01G *19/04, 13/00, 13/16, 13/02*
U.S. Cl. 177—25 **5 Claims**

1. An automatic combination weighing machine, comprising a plurality of retaining hoppers arranged in a circle, each of said hoppers having a normally closed gate at the bottom, which is opened temporarily in response to a gating signal, a shoot rotatably supported about the central axis of said circle, whereby the outlet of said shoot can face the inlet of any of said hoppers, means for intermittently rotating said shoot to cause said outlet to face sequentially the inlets of said hoppers, a single weighing device for weighing an article to be weighed and producing a weight output indicative of the weight of said article, means for feeding a plurality of articles to be weighed sequentially one by one or group by group and then discharging them into said shoot in synchronism with the rotation of said shoot, a plurality of memories corresponding respectively

to said hoppers, means for supplying said weight signal sequentially to said memories in synchronism with the rotation of said shoot, arithmetic means for summing up combination inputs of said memories and producing an output when the sum has a value within a predetermined range, a plurality of normally open switches for coupling the outputs of said memories respectively to the inputs of said arithmetic means, switch control means coupled to the control inputs of said switches for selectively closing said switches in accordance with predetermined combinations, and a temporary memory for successively storing the output of said switch control means and applying the content at that time to the reset inputs of said respective memories as reset signals and, at the same time, to the gates of said respective hoppers as said gating signals in response to the output of said arithmetic means, thereby clearing said memories corresponding to said closed switches and, at the same time, opening the gates of said hoppers corresponding to said memories.

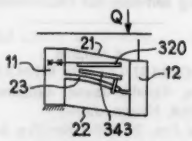


4,308,929

INTEGRAL PARALLELOGRAM CHARGE RECEIVER AND CAPACITIVE TRANSDUCER

Bernard J. Estavoyer, Gif S. Yvette, France, assignor to Testut-Aequitas, Paris, France

Filed Mar. 31, 1980, Ser. No. 135,320
Claims priority, application France, Apr. 2, 1979, 79 08218
Int. Cl.³ G01G *3/14, 3/08;* G01L *5/00*
U.S. Cl. 177—210 C **8 Claims**



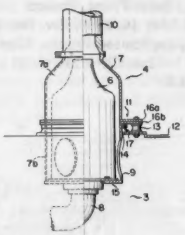
1. A load receiver comprising a stationary upright secured to a frame; a loaded upright secured to a load-carrying plate; two arms hinged into the uprights in order to form therewith a deformable parallelogram, the improvement wherein said two uprights and said two arms form an integral unit, the hinged joints being defined by constrictions of the constituent material of said integral unit, said integral unit having a portion thereof opposing an elastic response to the weight of a load placed on said load-carrying plate; a first electrode is secured with the stationary upright; and a second electrode is secured with a portion of said integral unit which is mobile under the effect of the load, said first and second electrodes defining a capacitive load transducer having a capacitive value related to the value of the load applied to said load carrying plate.

4,308,930

MUFFLER FOR A VEHICLE

Akio Iida, Kawasaki, and Kimio Miyake, Yokohama, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Oct. 24, 1979, Ser. No. 87,704
Claims priority, application Japan, Nov. 2, 1978, 53-150314
Int. Cl.³ F01N *1/14, 1/00*
U.S. Cl. 180—89.2 **3 Claims**



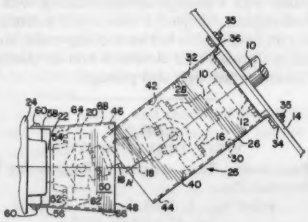
1. A muffler for a vehicle mounted on a hood of an engine compartment, comprising; an outer cylindrical member having a plurality of openings formed in the lower side wall thereof, said outer cylindrical member being formed in a conical shape at the upper side wall thereof and having a bottom wall in which a lower opening is formed, said outer cylindrical member comprising an upper cylindrical section and a lower cylindrical section each having a mounting flange fixedly secured to the lower end or upper end thereof, respectively; an inner cylindrical member mounted on the bottom wall of said outer cylindrical member, said inner cylindrical member being connected at the bottom thereof to an exhaust pipe and reduced in diameter at the upper side wall thereof; and mounting means for resiliently mounting said outer cylindrical member on said hood in such a manner that approximately lower half of said outer cylindrical member is positioned under said hood.

4,308,931

GUARD FOR DRIVE SHAFT IN AN ARTICULATED TRACTOR

Jagdish C. Khanna, Downers Grove, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Jan. 22, 1980, Ser. No. 114,437
Int. Cl.³ B60K *17/22;* F16P *1/02*
U.S. Cl. 180—235 **2 Claims**



1. In an articulated tractor having front and rear frames pivotally interconnected to define an axis of articulation, an engine mounted on the front frame, a drive shaft connected to and at all times rotatable with the engine and extending toward the rear frame, a support wall on said front frame rearward of the engine, a bearing secured to said wall and rotatably supporting said drive shaft, a first universal joint secured to said drive shaft, a sliding coupler connected to said first universal joint and extending between said frames, a second universal

joint secured to said coupler, a transfer case mounted on said rear frame and having an input shaft secured to said second universal joint; an arrangement to minimize damage to adjacent tractor components should either of said joints fail comprising:

a first guard member having a U-shaped cross-section connected to said wall and covering that portion of said drive shaft rearward of said wall, said first universal joint and a portion of said coupler;

a second guard member having a U-shaped cross-section connected to said transfer case and covering said input shaft, said second universal joint and a portion of said coupler;

each of said guard members having an upper member and a pair of downward depending side members defining adjacent vertical edges;

the U-shaped cross-section of one guard member being larger than the cross-section of the other so that a portion of the smaller may nest within the larger as the vehicle is articulated about said axis; and

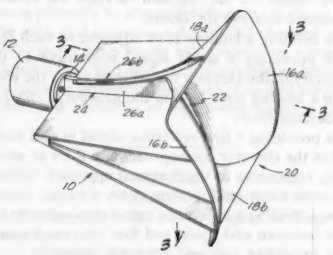
notches provided in the adjacent edges of the side members of the smaller guard member to provide clearance for said coupler during articulation.

4,308,932

LOUDSPEAKER HORN

D. Broadus Keele, Jr., Camarillo, Calif., assignor to James B. Lansing Sound, Inc. ("JBL"), Northridge, Calif.

Filed May 6, 1980, Ser. No. 147,014
Int. Cl.³ G10K *11/00*
U.S. Cl. 181—187 **14 Claims**



1. A loudspeaker horn comprising

a first pair of sidewalls having a contour defined by an equation having a constant term, a linear term and an exponential term, each of said terms including a non-zero constant,

a second pair of sidewalls disposed substantially ninety degrees to said first pair of sidewalls and having a contour defined by an equation of the same form as the equation defining the first pair of sidewalls, said first and second pairs of sidewalls being substantially congruent at one end to form a mouth, and said second pair of sidewalls forming a gap at the remaining end thereof, and

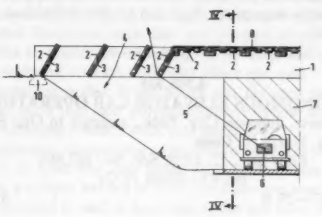
a connecting section connecting the gap formed by the second pair of sidewalls to the remaining end of the first pair of sidewalls to form a throat, said throat being adapted to be connected to a driver, said first pair of sidewalls being smoothly joined to said second pair of sidewalls and said connecting section.

4,308,933

OVERHEAD SOUND ATTENUATING COVER FOR ROADWAYS AND RAILWAYS

Volker Hahn, Leinfelden-Echterdingen, and Horst Widmann, Stuttgart, both of Fed. Rep. of Germany, assignors to Ed. Züblin Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Oct. 18, 1979, Ser. No. 86,256
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1978, 2845267
Int. Cl.³ G10K *11/00*
U.S. Cl. 181—210 **11 Claims**



1. A sound attenuating cover for use over a roadway or railway includes a lateral area which extends longitudinally along the side of the roadway, the cover including:

a first cover portion which extends over and completely covers the roadway or railway, and

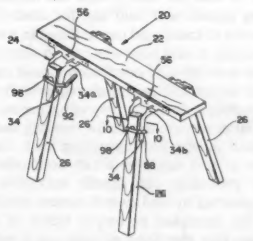
a second cover portion which extends in the horizontal direction and covers the lateral area only, the second portion including a plurality of sound baffles in the form of plates which plates extend substantially parallel with respect to the longitudinal extent of the roadway or railway, said plates being fixed and supported in spaced relation with respect to one another and each plate being oriented at substantially the same acute angle with respect to the roadway or railway, said plates also being intersected by a single horizontal plane; whereby the plates are parallel to one another to baffle sound emitted by vehicles travelling the roadway or railway while admitting light adjacent to the railway or roadway.

4,308,934

WORK SUPPORT

Ronald A. Jackson, Brockville, and John Maruscak, Athens, both of Canada, assignors to Black & Decker Inc., Newark, Del.

Filed Feb. 8, 1979, Ser. No. 10,210
Int. Cl.³ F16M *11/00*; E04G *1/32*
U.S. Cl. 182—184 **16 Claims**



1. A frame for a work support to carry a plank and to receive legs of varying heights comprising:

(a) a channel of one piece, having a base formed on the inner side thereof with outturned flanges at opposite edges of the base,

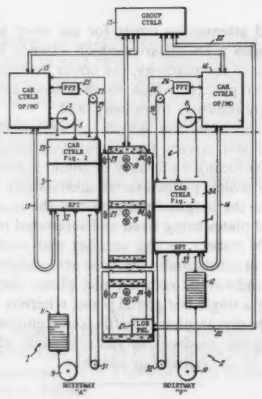
(b) the channel has a top portion to receive the plank and oppositely formed leg portions sloping outwardly and downwardly from the top portion,
(c) the leg portions have continuous recesses extending from the inner side of the channel to open at the outer side of the channel,
(d) at least one top bracket affixed to the top portion of the channel to engage and to hold the plank thereon,
(e) a pair of support lugs formed integrally with each of the leg portions, and
(f) a clamp extending across the recess of each of the leg portions to be pivotally connected to the support lugs to releasably engage the legs and set the individual heights thereof.

4,308,935

AUTONOMOUS ELEVATOR CAB OPERATION

J. Mark Deric, Johnson City, Tenn., assignor to Otis Elevator Company, Hartford, Conn.

Filed Dec. 27, 1979, Ser. No. 107,801
Int. Cl.³ B66B *13/24*
U.S. Cl. 187—29 R **5 Claims**



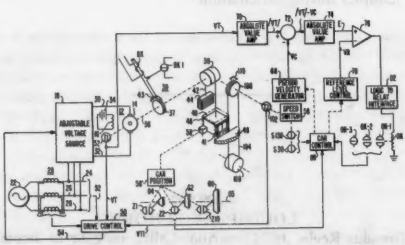
1. An elevator for servicing a plurality of floor landings adjacent an elevator hoistway in a building, comprising:
hall call means for registering requests for up or down service at each of said landings;
a car movably disposed in said hoistway;
car motion means for providing and arresting the motion of said car;
car controller means for providing signals indicative of conditions of said car and of said car motion means, for exchanging signals with said car, for controlling said car motion means to cause said car to move in a selected up or down direction in said hoistway and to stop in response to said signals indicative of conditions of said car and of said car motion means and to signals received from said car;
said car including a door for providing access to and from said car, a door motion means for opening and closing said door, switch means for registering calls for service by passengers in said car, and a cab controller comprising means for providing cab signals indicative of calls for service registered by said switch means, conditions of said car, and the occupied or empty status of said car, for determining that the floor of said car is within a given distance of one of said landings and providing a door zone signal indicative thereof, for exchanging signals with said car controller, and for controlling said door motion means in response to said cab signals and in response to signals received from said car controller;
characterized by said car controller including inhibit means operative in either of two states for enabling said car motion means to move said car when in a first one of said states and for forcing said car motion means to arrest the motion of said car when in the second one of said states; and
said cab controller comprising signal processing means for providing a communication failure signal indicative of a failure in exchanging signals between said cab controller and said car controller and in response to said failure signal, for setting said inhibit means into said second state and providing a door opening command to said door motion means in response to concurrent presence of said failure signal and said door zone signal.

4,308,936

ELEVATOR SYSTEM

William R. Caputo, Wyckoff, and John J. De Lorenzi, Washington, both of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 19, 1980, Ser. No. 122,339
Int. Cl.³ B66B *5/02*
U.S. Cl. 187—29 R **8 Claims**



1. An elevator system, comprising:
a structure having a plurality of floors,
an elevator car having at least one door,
motive means for moving said elevator car relative to the structure to serve the floors,
means defining a landing zone adjacent to each floor,
means providing a speed signal responsive to the actual velocity of the elevator car, at least while the elevator car is in a landing zone, and in the process of stopping at the associated floor,
means providing a first reference signal in said landing zone when the elevator car approaches a floor at which it is to stop, responsive to the designed approach velocity of the elevator car in said landing zone,
means providing a difference signal responsive to any deviation between said speed and first reference signals,
means providing a second reference signal,
comparator means comparing said difference and second reference signals, and providing a predetermined output signal when the difference signal exceeds said second reference signal,
and means initiating pre-opening of the door of said elevator car in said landing zone before the elevator car reaches the floor at which it is to stop, in the absence of said predetermined output signal.

4,308,937

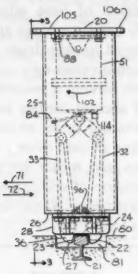
SELF-ALIGNING CLAMPING APPARATUS

Norman A. Johnson, 5325 10th Ave., Delta, B.C., Canada (V4M-1X6)

Filed Dec. 4, 1979, Ser. No. 100,056
Int. Cl.³ B61H *7/12*
U.S. Cl. 188—43 **15 Claims**

1. A self-aligning apparatus in combination with a clamped member having a lateral surface and opposing sides, a frame

means in opposed relation to said lateral surface and adapted for primary movement parallel to said clamped member and secondary movement substantially perpendicular to said opposing sides, lateral guide means secured to said frame means in opposed relation to said lateral surface, a pair of lever pin means operatively mounted in yoke means and slidably mounted in said lateral guide means, a pair of clamp levers each pivotally mounted intermediate its ends on one of said pair of lever pin means, each of said clamp levers having at one end a clamping surface in opposed relation to one of said opposing sides, said yoke means including clamp guide means on each side of said clamped member and lever centering means disposed between said clamp levers, a pair of actuating links pivotally interconnected at one end to each other, a linear actuator means pivotally mounted at one end in said frame means about a first axis substantially parallel to said clamped



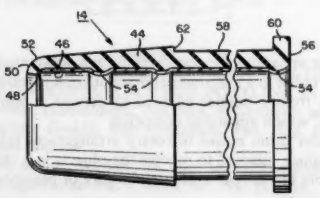
member, each of said actuating links pivotally interconnected at its other end to the other end of one of said clamp levers, said actuating links pivotally interconnected to said linear actuator means on an axis substantially parallel to said first axis, whereby actuation of said linear actuator means impels said clamping surfaces against said opposing sides of said clamped member and slidable movement of said yoke means with respect to said lateral guide means compensates for said secondary movement of said frame means and said linear actuator means moves pivotally to allow said clamping surfaces to align themselves with said opposing sides of said clamped member, and whereby said clamp levers make operative contact with said centering means and said clamping surfaces become disposed substantially symmetrically relative to said clamp guide means when said actuation of said linear actuator means is reversed.

4,308,938

DISC BRAKE ASSEMBLY AND METHOD

Dennis N. Denton, Gastonia, N.C., assignor to Garlock Inc., Longview, Tex.

Filed Feb. 23, 1979, Ser. No. 14,354
Int. Cl.³ F16D *65/02*
U.S. Cl. 188—73.45 **13 Claims**



1. A method for preventing binding of a disc brake slider pin in a bushing of a disc brake caliper comprising:

(a) inserting, into a slider pin bore of a disc brake caliper, a unitary, one-piece, molded, tubular bushing seal including a molded tubular elastomeric body and a simultaneously hydraulically formed tubular polytetrafluoroethylene liner bonded to the inside diameter of said elastomeric body, said liner including a polytetrafluoroethylene scraper lip adjacent the inboard end of said bushing seal for scraping foreign particles off of the below-recited slider pin as said caliper and bushing seal move relative to said slider pin, said scraper lip portion of said liner being bonded to and being in direct contact with a portion of said elastomeric body, said portion of said elastomeric body being located directly radially outwardly from said scraper lip and being solid and continuous throughout its radial dimension such that said portion of said body provides an elastomeric backing for holding said scraping lip in scraping contact with said slider pin, and

(b) installing a disc brake slider pin through said bushing seal, such that said polytetrafluoroethylene scraper lip is in scraping contact with said slider pin.

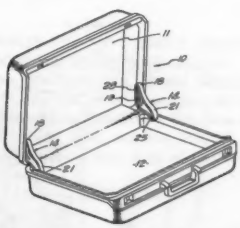
8. Apparatus comprising a disc brake assembly including an adaptor, at least one disc brake slider pin connected to said adaptor, a caliper having at least one slider pin bore, a bushing seal positioned in said at least one slider pin bore, said at least one slider pin being movably located inside of said at least one bushing seal whereby said caliper is movably mounted on said adaptor, and a pair of movable disc brake pads mounted on said adaptor, said at least one bushing seal comprising a unitary, one-piece, molded, tubular bushing seal including a molded, tubular, elastomeric body and a simultaneously, hydraulically formed tubular polytetrafluoroethylene liner bonded to the inside diameter of said elastomeric body, said liner having a polytetrafluoroethylene scraper lip adjacent the inboard end of said bushing seal in scraping contact with the outside diameter surface of said at least one slider pin extending therethrough, said scraper lip portion of said liner being bonded to and being in direct contact with a portion of said elastomeric body, said portion of said elastomeric body being located directly radially outwardly from said scraper lip and being solid and continuous throughout its radial dimension such that said portion of said body provides an elastomeric backing for holding said scraper lip in scraping contact with said slider pin.

4,308,939

LUGGAGE CASE WITH BRACE

Jerry D. Eubanks, Westminster, and Charles F. Rose, Aurora, both of Colo., assignors to Samsonite Corporation, Denver, Colo.

Division of Ser. No. 44,459, Jun. 1, 1979, Pat. No. 4,239,093.
This application Sep. 8, 1980, Ser. No. 185,222
Int. Cl.³ A45C *13/34*
U.S. Cl. 190—41 R **5 Claims**



1. Apparatus for controlling the rate and extent of opening and closing a case having first and second case shell parts hinged together, comprising:

a resilient member having a pair of generally parallel elongated slots and a further opening;

a first stud affixed to an inner surface of said first case shell part extending generally parallel to the hinge, which stud

is rotatably received within said member further opening; and

a second stud received through one of the slots and affixed to an inner wall of said second case shell part, said second stud extending generally parallel to said first stud and having a cross-section dimension exceeding the slot width through which said stud is received.

4,308,940

HYDRAULIC CONTROL FOR A CLUTCH

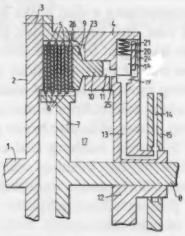
Theodorus P. M. Cadee, Goirle, Netherlands, assignor to Van Doorne's Transmissie B.V., Tilburg, Netherlands

Filed Nov. 28, 1979, Ser. No. 98,252

Claims priority, application Netherlands, Dec. 5, 1978, 7811860

Int. Cl.³ F16D *43/284, 13/72*

U.S. Cl. 192—103 FA **10 Claims**



1. An apparatus for controlling a clutch operable by means of a fluid pressure in an operation space, said apparatus comprising a fluid supply conduit, a rotatable control valve with a valve member displaceable by centrifugal force against the force of a biasing spring for connecting the fluid supply conduit to the operation space, and a fluid connection between the operation space and the valve member for supplying fluid pressure from the operation space to the valve member in a direction against the centrifugal force.

4,308,941

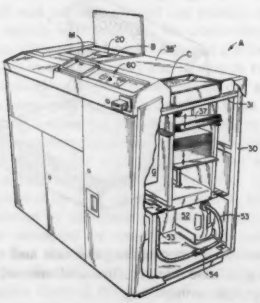
LOGIC FOR COIN OPERATED OFFICE COPY MACHINE VENDER

Bruno A. Rist, Woodland Hills; Michael D. D. England, Reseda, both of Calif., and Les R. Cousineau, Needham, Mass., assignors to 501 Vendacopy, Inc., Foster City, Calif.

Filed Oct. 24, 1979, Ser. No. 87,842

Int. Cl.³ G07F *17/00*

U.S. Cl. 194—1 C **4 Claims**



1. A copy machine having a connection to a power source, a rotating drum including a photosensitive surface for receiving thereon an electrostatic image of a copy, a motor for rotating said drum upon the receipt of power from said power source, an applicator registered to said drum for supplying toner and dispersant, a toner and dispersant reservoir, and a pump connected to said power source having a suction to said toner and dispersant reservoir and an output to said applicator, apparatus for maintaining said applicator and drum in a state of readiness for the production of copy from said copy machine, said apparatus comprising:

means for sensing the interruption of power connected with said power source, said means for sensing having an output;

means for inhibiting rotation of said drum responsive to said output whereby pumping from said reservoir to said applicator without drum rotation occurs upon interruption of the power;

first timing means for restoring drum rotation at the end of a preselected period of time whereby rotation of said drum occurs only against a toner and dispersant saturated applicator registered to said drum to prevent scarring of said drum on machine start-up;

second timing means having a second output;

said output of said second timing means operatively connected to said rotating drum to commence timing upon stopping of rotation of said drum;

means connected to said motor for rotating said drum to cause periodic rotation of said drum and pumping of toner to said applicator upon a signal from the output of said second timing means.

4,308,942

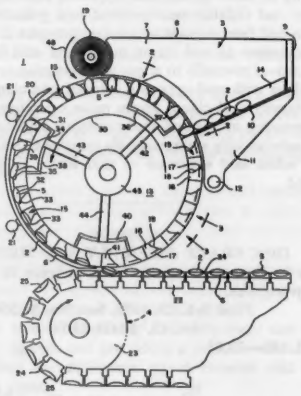
SINGLE DRUM MATERIAL ORIENTATION APPARATUS AND METHOD

Michael Ackley, 1273 N. Church St., Moorestown, N.J. 08057

Filed Oct. 29, 1979, Ser. No. 89,190

Int. Cl.³ B65G *47/24*

U.S. Cl. 198—380 **46 Claims**



1. An apparatus for transferring, in a substantially uniform, from a radial to a longitudinal orientation, a plurality of shaped objects from a hopper adapted to contain a plurality of the objects, which apparatus comprises

transfer drum means in rotary arrangement relative to the hopper, adapted to receive the objects in a radial position from the hopper within a plurality of peripherally spaced cavities,

the cavities comprising a first, substantially radially aligned pocket which communicates with a second, substantially longitudinally aligned pocket, the objects being received in the cavities in a radial orientation in the radial pocket, means for re-orienting the objects, assisted by the transfer

drum means, from the substantially radial orientation to a substantially longitudinal orientation within the substantially longitudinally aligned pocket which communicates with the substantially radially aligned pocket, wherein substantially the objects which have been received by the transfer drum means are re-oriented from a substantially radial orientation to a substantially longitudinal orientation, and

means for receiving the longitudinally oriented objects from the transfer drum means in a substantially longitudinal orientation independent of the radial position of the pocket, which receiving means is operatively associated with the conveyor means.

4,308,943

LIQUOR FLASK ORIENTER

Harry D. Gierhart, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

Filed Apr. 14, 1980, Ser. No. 140,116
Int. Cl.³ B65G *47/24*
U.S. Cl. 198—399 **16 Claims**

1. Apparatus for orienting concave-sided glass containers such as flasks, as they are being conveyed on a conveyor, to position all of the concave sides thereof in the same orientation, said apparatus comprising

a shoe mounted adjacent the path of the containers on the conveyor, said shoe having a face including a ramp portion which extends progressively into the path of the containers as they move downstream, the ramp portion merging into a convexly curved apex portion, said apex portion extending furthest into the path of movement of the containers,

a biasing arm projecting into the path of container movement from the side of the conveyor opposite the shoe, the biasing arm positioned to urge each container against the shoe face as the container is carried therepast,

the shoe thereby acting on containers whose concave side is away from the shoe to cause such containers to turn into a crosswise position on the conveyor, but not to turn containers whose concave side is toward the shoe, and

a brake downstream of the arm and shoe and positioned to engage only those containers which have been turned to a crosswise position, said brake exerting a torque on such crosswise containers and thereby causing them to be rotated, by motion of the conveyor, from said crosswise position to a position in which the concave faces thereof are more nearly toward the shoe side of the conveyor than toward the opposite side thereof.

4,308,944

LOW-NOISE SPEED REDUCTION FOR A ONE-TRACK BOTTLE FLOW, ESPECIALLY FOR BOTTLING PLANTS

Wolfgang Probst, Hohenbrunn, Fed. Rep. of Germany, assignor to Seitz-Werke GmbH, Bad Kreuznach, Fed. Rep. of Germany, a part interest

Continuation of Ser. No. 915,756, Jun. 15, 1978, abandoned. This application Jul. 2, 1980, Ser. No. 165,354
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1977, 2727278
Int. Cl.³ B65G *47/31*
U.S. Cl. 198—442 **3 Claims**

1. A bottle distributing station for a low-noise speed reduction of a single-track bottle flow over a smooth and even transporting surface to plural rows of bottles for delivery at a slower speed, especially for bottling plants, which includes in combination: movable conveyor means comprising a first conveyor section for receiving and conveying a first single row of bottles at a first speed in an open flow of bottles arranged in predetermined spaced relationship to each other, said conveyor means also comprising a second conveyor section operable to receive said first single row of bottles in a single track along the open flow of bottles from said first conveyor section and to advance bottles in said single track along the open flow of bottles at a second speed reduced with respect to the first speed resulting in that for attaining closed-up flow of bottles with low noise when open flow of bottles is changed to closed-up flow of bottles, a third conveyor section following said second conveyor section to receive the closed-up flow of bottles in a second single row accellerated and increased with respect to the second speed thereby to provide a speed above that of said second conveyor section, at least one substantially wider withdrawing conveyor section following said third conveyor section for receiving a plurality of rows of bottles, from said second single row, and rail means for guiding

the first single row of bottles from the first conveyor section onto the second conveyor section, the third conveyor section and the withdrawing conveyor section in succession, said rail means including a rail segment for guiding the closed-up flow of bottles in said second single row onto said at least one withdrawing conveyor section, said at least one withdrawing conveyor section being operable at a differing speed considerably reduced over that of said first mentioned closed-up flow of bottles, so that said plural rows of bottles are delivered at a slower speed than said second row, said rail segment defining with the direction of movement of said at least one withdrawing conveyor section such a relatively great angle as to direct the bottle flow from said second single row across said wider conveyor section to form plural rows of said bottles on said withdrawing conveyor section, said third conveyor section being interposed directly between said second conveyor section and said at least one withdrawing conveyor section, said third conveyor section being operable at higher speed than the preceding second conveyor section and providing additional pushing force to form said plural rows of bottles on said withdrawing conveyor section.

4,308,945

APPARATUS FOR TRANSVERSELY CONVEYING PROFILED RODS AND RAILS

Wilhelm Beckmann, Ratingen, and Friedel Mogendorf, Duisburg, both of Fed. Rep. of Germany, assignors to Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

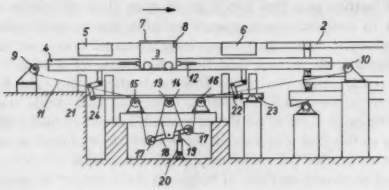
Filed Jan. 18, 1980, Ser. No. 113,186
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1979, 2901811
Int. Cl.³ B65G *25/00*
U.S. Cl. 198—750 **5 Claims**

1. Apparatus for conveying profiled rods or rails in a direction transverse to their length, comprising a plurality of adjacent carriages for conveying a profiled rod or rail, said carriages being displaceable along said direction of conveyance,

a respective cable connected to each carriage, a respective rotatable drive means operably connected to each respective cable for driving each cable,

a common drive means for said respective rotatable drive means for effecting simultaneous displacement of all said carriages, and

individual displacement means operatively connected with each carriage to effect positive, stepless individual displacement of each said carriage independently of said



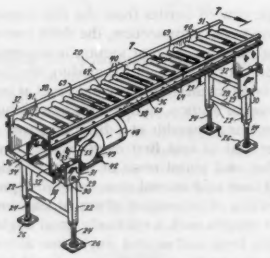
drive means comprising, guide rollers positioned on both sides of the respective rotatable drive means over which said cable is guided, and means to vertically, uniformly displace said guide rollers in mutually opposite directions.

4,308,946

CONVERTIBLE CONVEYOR

Joseph F. Ouellette, Glendale, Mo., assignor to Ouellette Machinery Systems, Inc., Fenton, Mo.

Filed Dec. 26, 1978, Ser. No. 972,915
Int. Cl.³ B65G *13/07*
U.S. Cl. 198—790 **14 Claims**



1. A gravity roller conveyor comprising a pair of side frames, a plurality of rollers rotatably mounted between said side frames, and means to convert said conveyor to a power roller conveyor including a mounting plate to receive a motor, a center bracket, said center bracket being disposed between said side frames at an end of said conveyor to receive and rotatably mount a drive shaft and end pulley and means connecting said end pulley and said motor in a driving relationship, means to rotatably mount a second drive shaft and end pulley at the opposite end of said conveyor, means to mount a plurality of guide pulleys between said side frames and extending downwardly between said rollers, means to mount a belt tightener to tighten an endless belt around said end pulleys and guide pulleys so that the endless belt contacts said rollers, said guide pulleys having means to adjust the pressure applied to the belt and said pulleys and tightener having means to permit the rapid installation or removal of said endless belt without disassembly of same.

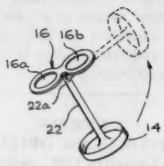
14. A roller conveyor comprising a pair of side frames, a plurality of rollers rotatably mounted and extending between said side frames, said side frames being curved with said rollers being tapered and mounted so that their upper edges form a substantially level surface, means to mount a drive belt and urge it against the rollers substantially near their mid-point, a support at each end of said conveyor to support said side frames, and a center spine disposed beneath said plurality of rollers, and extending the length of said conveyor between said supports to substantially strengthen and support said conveyor to thereby reduce the required size of said side frames.

4,308,947

CONTACT LENS HOLDING AND APPLICATOR DEVICE

Erik M. Arnhem, 4113 Beverly Blvd., Los Angeles, Calif. 90004

Continuation-in-part of Ser. No. 82,811, Oct. 9, 1979. This application Feb. 11, 1980, Ser. No. 120,538
Int. Cl.³ B65D *85/00*; B08B *3/10*; A61F *9/00*; A45C *11/04*
U.S. Cl. 206—5.1 **2 Claims**



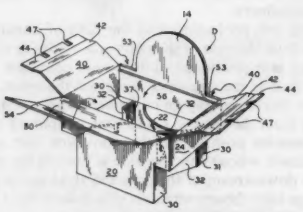
1. In a device for contact lenses, comprising:
(a) means for ocularly applying contact lenses accommodated thereon;
(b) contact lens retaining means mountable on the contact lens applying means;
(c) holding means for the contact lens applying and retaining means;
(d) closing means mountable on the housing means;
(e) a rodlet, one end of which is mounted to and extends perpendicularly from the closing means, the other end of the rodlet being mounted to the contact lens applying means for manipulation thereof.

4,308,948

PAPERBOARD DISPLAY STAND

John G. Provost, Stoneham, Mass., assignor to Container Corporation of America, Chicago, Ill.

Filed Oct. 6, 1980, Ser. No. 194,077
Int. Cl.³ B65D *5/52, 25/24*
U.S. Cl. 206—45.25 **5 Claims**

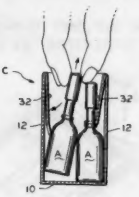


1. A collapsible display stand, formed from a unitary blank of foldable sheet material such as paperboard, comprising:
(a) a tray member including opposed pairs of front and rear walls and side walls foldably interconnected to form a tubular structure;
(b) a base member including:
(i) a pair of opposed front and rear walls, which are lower extensions of said tray member front and rear walls;
(ii) a pair of opposed side structures extending between and interconnecting said front and rear walls and each including a pair of inwardly converging support panels foldably joined to each other;
(c) said tray member also including:
(i) first panel means foldably joined to said side panels and having interlocking engagement with said support panels for maintaining said device in erected condition;
(ii) second panel means foldably joined to said front and rear walls and disposed to overlie and be supported by said support panels to form a bottom wall for said tray member.

4,308,949
DISPENSING CARTON FOR SMALL BOTTLES

Richard F. House, St. Charles, Ill., assignor to Container Corporation of America, Chicago, Ill.

Filed Oct. 6, 1980, Ser. No. 194,076
Int. Cl.³ B65D *75/00*
U.S. Cl. 206—148 **4 Claims**



1. A carton, formed of a unitary blank of foldable paperboard or the like, for holding and dispensing, one at a time, a plurality of articles such as small bottles arranged in at least one row extending longitudinally of the carton, said carton comprising:

(a) a bottom wall panel;

(b) opposed pairs of outer end and outer side wall panels foldably joined to and upstanding from opposed end and side edges, respectively, of said bottom wall panel;

(c) a top wall panel including a pair of panel sections foldably joined to the upper edges of respective outer end wall panels and extending inwardly therefrom toward each other but being spaced from each other to provide a central opening in the carton;

(d) a pair of opposed inner end wall panels foldably joined to inboard edges of respective top wall panel sections and extending downwardly therefrom toward said bottom wall panel;

(e) a pair of opposed inner side wall shadow panels foldably joined to upper edges of respective side wall panels, intermediate said top wall panel sections, and extending downwardly into the carton toward each other;

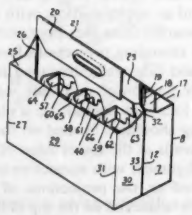
(f) a pair of relatively narrow retaining panels foldably joined to lower edges of respective shadow panels and extending toward each other;

(g) each of said retaining panels having a plurality of longitudinally spaced slots for partial engagement with adjacent packaged articles.

4,308,950
ARTICLE CARRIER

Prentice J. Wood, Hapeville, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed May 19, 1980, Ser. No. 150,991
Int. Cl.³ B65D *5/48*
U.S. Cl. 206—188 **12 Claims**

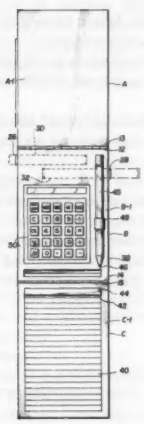


1. An article carrier comprising a bottom panel, opposed side walls foldably joined to opposite side edges of said bottom panel, end panels foldably joined to the ends of said sidewalls and extending transversely inward therefrom, medial riser panels foldably joined to said end panels respectively, the riser panels at each end of the carrier being secured together in face contacting relation, a medial multi-ply handle connected at its ends to said riser panels, a medial keel panel formed integrally with each riser panel at one end of the carrier and projecting inwardly therefrom, a first transverse partition panel foldably joined to one of said keel panels and arranged with its outer edge anchored to one of said side walls, a second transverse partition panel having its inner edge anchored to the other of said keel panels and its outer edge anchored to the other of said side walls, and a reinforcing tab foldably joined to said other keel panel and disposed in flat face contacting relation with said first transverse partition panel and secured thereto thereby to aid in holding said medial keel panels in close juxtaposition to each other and to prevent outward bowing of said side walls.

4,308,951
COLLAPSIBLE BOOK SUPPORT AND ORGANIZER

Ellis Walker, Jr., 8947 Tamar Dr., Apt. 302, Columbia, Md. 21045

Filed Nov. 5, 1979, Ser. No. 91,573
Int. Cl.³ A45C *11/34*; B65D *81/36, 85/00*
U.S. Cl. 206—214 **21 Claims**



1. A reversible hinged collapsible book support and organizer device comprising:

first, second and third leaves, pivotally connected end-to-end along transverse edges said second leaf being respectively pivotally connected at opposite ends thereof to said first and third leaves, said leaves having front surfaces and rear surfaces, all of said front surfaces facing in the same direction when said device is laid flat on a plane surface and which folds to a flat configuration wherein said front side of said first leaf and said second side of said third leaf provides a front and back cover for said device;

means for releasably holding said first leaf relative to said second leaf in an inverted "V"-shaped orientation with said front surfaces facing upward so that said second leaf front surface may serve as a vertical support for a book; and

means for fastening note paper to the front surface of said third leaf;

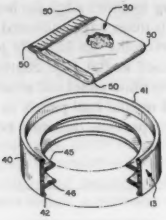
said notepad fastening means including means for horizontally supporting said book when said book is propped against second leaf front surface.

4,308,952

CONTAINER ASSEMBLY

Jeno F. Paulucci, Duluth, Minn., assignor to Jeno's, Inc., Duluth, Minn.

Filed Jan. 28, 1980, Ser. No. 115,799
Int. Cl.³ B65D *21/02*
U.S. Cl. 206—216 **3 Claims**



1. An assembly, comprising:

(a) a first cylindrical commodity can having a bead extending around a lower end,

(b) a second cylindrical commodity can having a bead extending around an upper end,

(c) a storage unit connector between said first and second cans,

(d) said connector being fabricated of a relatively rigid plastic having some resiliency,

(e) said connector including a cylindrical wall having upper and lower edges around which inwardly extending lips are formed,

(f) a pair of longitudinal spaced shoulders formed inwardly from said wall and defining an annular channel therebetween,

(g) said bead of said first can seating against one of said shoulders and said bead of said second can seating against the other of said shoulders whereby said lips overlie corresponding beads and retain said first and second cans in assembly with said connector, and

(h) a commodity package seated in said channel between said shoulders.

4,308,953

ELECTRICALLY CONDUCTIVE CONTAINER

Joel B. Cohen, Wynnewood, Pa., assignor to Shell Container Systems, Springfield, N.J.

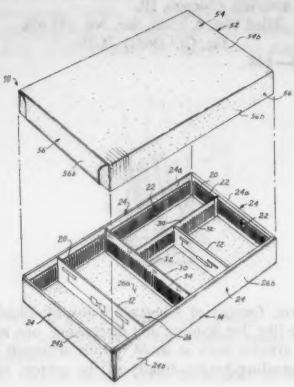
Filed Feb. 20, 1980, Ser. No. 122,814
Int. Cl.³ B65D *73/02*
U.S. Cl. 206—334 **21 Claims**

1. An electrically conductive container for rigid planar objects comprising:

a non-conductive container member made of a non-conductive material and having an interior wall surface defining an interior of said container member and an exterior wall surface;

electrically conductive holding panels having a plurality of slots therein, said holding panels being arranged on said interior wall surface of said container member to provide oppositely disposed slots which cooperate to form a plurality of holding pockets for positively receiving and holding said objects in said interior of said container member;

and exterior electrically conductive portion on said exterior wall surface of said container member; and



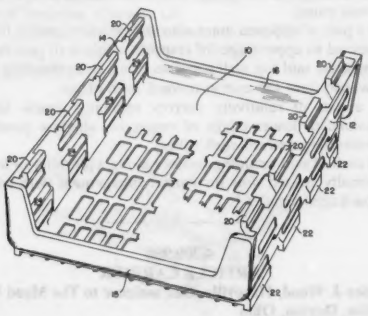
electrically conductive means for electrically connecting said holding panels to said exterior electrically conductive portion of said container member.

4,308,954

PLASTIC NESTABLE-STACKABLE RECEPTACLE

James D. Wilson, 421 Vista Suerte, Newport Beach, Calif. 92660

Filed Feb. 22, 1980, Ser. No. 123,663
Int. Cl.³ B65D *21/04*
U.S. Cl. 206—505 **3 Claims**



1. A receptacle adapted to be stacked and nested with a like receptacle, said receptacle comprising: a bottom; a pair of side walls integral with said bottom each of said side walls having a lower portion and an upper portion, with the lower portion being displaced inwardly from the upper portion; a plurality of discrete upwardly extending projections formed on the upper edge of each of said side walls displaced inwardly from the plane of the upper portion of such side wall and positioned thereon at spaced locations therealong; a plurality of discrete downwardly facing shoulders formed on the outer surface of each of said side walls at the lower edge of each of said side walls in vertical alignment with respective ones of the projections to be received on the projections of a like receptacle when the receptacle is stacked on the top of the like receptacle; and each of said side walls being configured to define a plurality of upwardly-facing slots at the border of the upper and lower portion of such side wall in vertical alignment with respective ones of the projections and displaced downwardly from the projections towards said bottom to receive the shoulders of the like receptacle when the like receptacle is nested

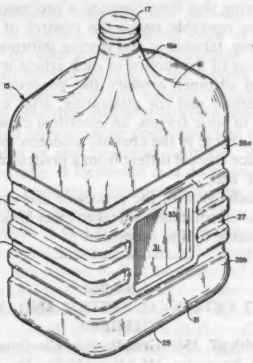
into the receptacle with the inner edges of the slots forming a support for the like receptacle.

4,308,955

INTERFITTING, STACKABLE BOTTLES

Warren J. Schieser, Dublin, and Craig L. Duffey, Galena, both of Ohio, assignors to Liqui-Box Corporation, Worthington, Ohio

Filed May 27, 1980, Ser. No. 153,086
Int. Cl.³ B65D *21/02, 1/02*
U.S. Cl. 206—509 **6 Claims**



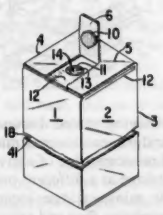
1. A bottle having a hollow body including at least two opposed straight sides, one of the sides having at least one mortise in its surface and the other a complemental tenon on its surface so that when a plurality of the bottles are stacked on their sides the mortise and tenon at adjacent sides interfit, said body also having reinforcing embossed ribs on the surfaces of said sides which alternate axially with grooves formed therein, the mortises and tenons of adjacent sides of the bottles when stacked on their sides interlocking and serving to also locate the reinforcing ribs axially in alignment so that they are in superimposed contacting relationship to prevent undue distortion of the hollow stacked bodies.

4,308,956

RESEALABLE CONTAINER

John J. Steinke, Whitehouse Station, and George Kaufman, North Brunswick, both of N.J., assignors to Church & Dwight Co., Inc., Piscataway, N.J.

Filed Nov. 14, 1979, Ser. No. 94,195
Int. Cl.³ B43M *7/00;* **B65D** *5/70, 5/72*
U.S. Cl. 206—611 **8 Claims**



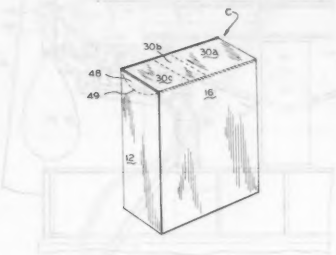
8. A three-dimensional container with a square or rectangular cross-section comprising a top portion, a bottom portion and 4 side portions, the top portion being formed by a hinged flap of each side portion and adapted to lap one another, the inner-most flap being provided with a centrally registered opening, the second inner-most flap being provided with a centrally registered opening, the second outer-most flap being provided with a centrally registered die-cut piece secured to the outer-most flap and the outer-most flap being provided with a hinged flap portion to open and close the container with the die-cut portion secured to the hinged flap.

4,308,957

DISPENSING CARTON

Christine E. Ward, Warrenville, Ill., assignor to Container Corporation of America, Chicago, Ill.

Filed Aug. 25, 1980, Ser. No. 181,215
Int. Cl.³ B65D *3/26, 5/70, 75/62*
U.S. Cl. 206—626 **5 Claims**



1. In a carton, formed of foldable sheet material such as paperboard, for holding separate products and for dispensing one of said products, the combination of:

(a) pairs of opposed major and minor side wall panels foldably joined to each other to form a tubular structure open at the ends;

(b) closure means for the lower end of said carton including a pair of outer and inner lower end panels foldably joined to respective major side walls and secured to each other in overlapped relation;

(c) closure and dispensing means for the upper end of said carton including:

(i) a pair of outer and inner end panels detachably joined to certain of side wall panels and secured to each other in overlapped relation;

(ii) an insert secured to upper portions of certain of said side wall panels and extending over the upper end of said tubular structure;

(d) said insert including:

(i) an upper horizontal panel disposed immediately below said upper end panels and presenting an opening for dispensing one product from said carton;

(ii) a lower horizontal panel disposed a short distance below said upper end panels, connected to said upper horizontal panel by a vertical panel, and defining with said vertical panel, said upper end panels, and certain of said side wall panels a cavity for holding another product;

(f) said upper end panels being divided in three sections by a pair of score lines extending parallel to each other and to said minor side wall panels, so that upon reclosure of the carton, after initial opening and removal of said other product from said cavity, said three sections can be folded against said vertical and horizontal panels of said insert.

4,308,958

APPARATUS FOR SEPARATING UNACCEPTABLE ELONGATED ELEMENTS

Kenneth L. Klusmier, Worcester, Mass., assignor to Morgan Construction Company, Worcester, Mass.

Filed Mar. 17, 1980, Ser. No. 131,143
Int. Cl.³ B07C *5/14*
U.S. Cl. 209—518 **3 Claims**

1. Apparatus for separating elongated unacceptable elements

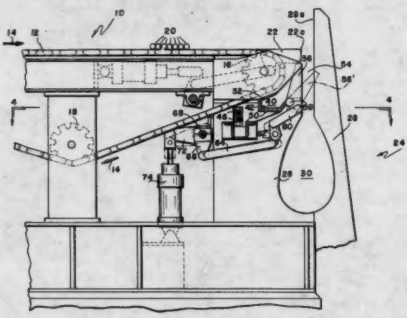
from a batch of elongated elements being dropped laterally and singly from the delivery end of a conveyor into an accumulating zone, said apparatus comprising:

(a) means underlying said conveyor for providing a discharge zone for unacceptable elements;

(b) first guide means spaced forwardly of said delivery end;

(c) second guide means arranged between said discharge zone and said first guide means; and

(d) means for movably adjusting said second guide means between



(i) a guide position underlying said delivery end and cooperating in spaced relationship with said first guide means to direct elongated elements along a downward path from said delivery end to said accumulating zone, and

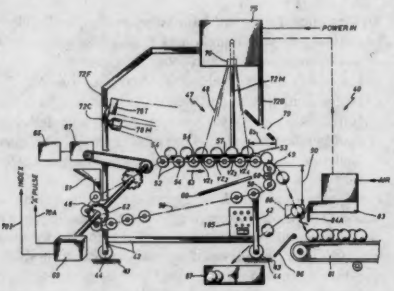
(ii) a deflecting position extending outwardly from beneath said delivery end and across said path to direct elongated elements to said discharge zone.

4,308,959

ROLL SORTING APPARATUS

Michael C. Hoover; Charles R. Brazell; Shyam B. Mehta; James F. Lockett, and Elias H. Codding, all of Houston, Tex., assignors to Geosource Inc., Houston, Tex.

Filed May 30, 1979, Ser. No. 43,694
Int. Cl.³ B07C 5/342
U.S. Cl. 209—563 **86 Claims**



1. Apparatus for sorting articles comprising:

a roller conveyor for carrying a random array of articles in transverse channels, each channel being defined between two adjacent rollers, and for rotating the articles in each channel through a viewing zone defined therein as the conveyor is moved longitudinally a predetermined distance through a viewed area during a predetermined time frame;

means for generating an electrical image of the viewed area on an electrical image plane;

a scanner for scanning the electrical image plane once during every predetermined time frame;

means associated with the scanner for generating, during each time frame, an electrical characteristic signal representative of a predetermined physical characteristic on the portion of the surface of each article within each viewing zone during that time frame;

means for selecting, during each time frame, the part of the electrical image plane corresponding to a predetermined viewing zone within a predetermined channel and for transmitting the electrical characteristic signals representative of the portion of each article within that viewing zone during that time frame to a processor;

a processor operable under the control of a program for processing, tabulating and storing information as to what proportion of the surface of each article within the predetermined channel exhibits the predetermined physical characteristic and for generating, after a predetermined number of time frames, an electrical classification signal for each article in the channel whereon the proportion of the surface thereof differs from a predetermined reference standard; and,

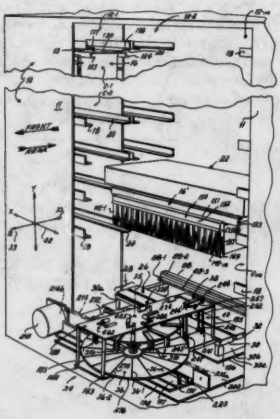
means associated with the processor and responsive to the electrical classification signal to eject articles classified as unacceptable by the processor.

4,308,960

DOCUMENT RETRIEVAL SYSTEM AND COMPONENTS THEREOF

Robert J. Kalthoff, 2560 Grandin Rd., Cincinnati, Ohio 45208, and Paul J. Neumeier, 315 Miami Valley Dr., Loveland, Ohio 45140

Filed Apr. 21, 1980, Ser. No. 142,854
Int. Cl.³ B07C 5/36
U.S. Cl. 209—612 **90 Claims**



1. Apparatus for retrieving stored documents comprising:

a plurality of cartridges each containing plural minicartridges, each said minicartridge of a given cartridge being stored in said cartridge at a different predetermined selectively addressable minicartridge location, each of said minicartridges containing first and second open walls, said minicartridges each containing randomly stored documents encoded along at least one sorting edge thereof and disposed in said minicartridge in face-to-face relationship with their sorting edges in alignment adjacent said first open wall and a second one of their edges in alignment adjacent said second open wall, said minicartridges of a cartridge being arranged with said first minicartridge walls thereof disposed to collectively define a first car-

tridge surface and said second minicartridge walls thereof disposed to collectively define a second cartridge surface,

a plurality of separate addressable stationary cartridge storage crypts, each crypt normally storing a different cartridge,

a document selector located remote from said crypts, said document selector having document selecting elements disposed to define a sorting surface substantially coextensive with said first cartridge surface of a retrieved cartridge for facilitating selection movement of only a desired document of a selected minicartridge of said retrieved cartridge operatively engaged with said document selecting elements, said selection movement being in a direction to displace said second edge of said desired document of said selected minicartridge through said second wall thereof relative to the second edges of the undesired documents in said selected minicartridge,

minicartridge selecting means selectively engageable with said selected minicartridge containing said desired document located in said retrieved cartridge, when said retrieved cartridge is located at said document selector for engaging in operative document selecting relation with said document selecting elements the sorting edges of only the documents of said selected minicartridge,

selected document removal means selectively positionable relative to said second wall of said selected minicartridge containing said desired document for removing from said selected minicartridge said displaced selected document extending through said second wall thereof,

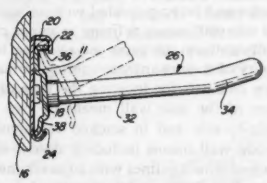
a cartridge retriever movable between said remote document selector and a selected crypt for transferring a cartridge containing a desired document between its associated storage crypt and said document selector.

4,308,961

ARTICLE SUPPORTING STRUCTURE

Thomas M. Kunce, 7946 Birchdale Ave., Elmwood Park, Ill. 60635

Filed May 5, 1980, Ser. No. 146,757
Int. Cl.³ A47F *5/00*
U.S. Cl. 211—94.5 **3 Claims**



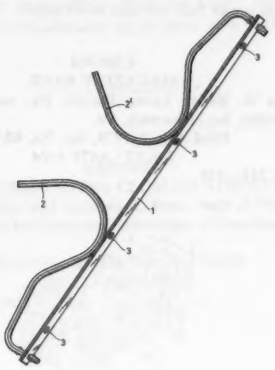
1. An article supporting device comprising an elongated rail having a flat base member adapted to be anchored to a wall or stud and having upper and lower sides, a channel member on the upper side of said base, the terminal end of which extends over a portion of said base, and an arcuate member extending upwardly and inwardly and lying over a portion of said base, in combination with a hook member having an elevated base, and a rod anchored at one end to said base and extending outwardly therefrom, said elevated base having an upper and lower side, an integrally formed offset portion on the upper side of said elevated base extending therebelow and terminating in a right angled member, an integrally formed offset portion on the lower side of said base extending below said base and terminating downwardly and inwardly, whereby when said right angled portion is placed in said channel and the terminal end of the offset lower member snapped over said arcuate member, the hook member will be slidably secured in said rail.

4,308,962

SUPPORT ROD FOR MULTIPLE CLOTHES HANGERS

Ibrahim Fahmi, Lewrenz-Strasse 119, 4150 Krefeld, Fed. Rep. of Germany

Filed May 29, 1979, Ser. No. 42,819
Claims priority, application Fed. Rep. of Germany, May 29, 1978, 7816030[U]
Int. Cl.³ A47F *5/08*
U.S. Cl. 211—118 **1 Claim**



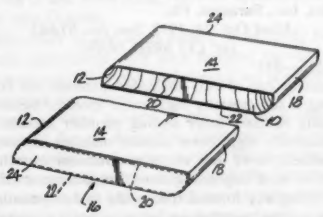
1. A support rod for supporting a plurality of clothes hangers comprising an elongated rigid bar having a pair of opposed planar surfaces with a plurality of first bores spaced apart in the elongated direction of said bar and extending between and through said planar surfaces, each said first bore arranged to receive a single hanger so that the hanger can be removably suspended from said bar, said rigid bar having a second bore at each of the opposite ends thereof spaced apart in the elongated direction with said second bores extending between and through said planar surfaces, a hook-shaped single unit member fitted into and secured within each of said second bores with the end of said hook-shaped member within said second bore extending perpendicularly to said planar surfaces, each said hook-shaped member being freely rotatable through 360° within the corresponding said second bore about the axis of the end of said hook-shaped member extending through said second bore and said hooks are constructed dimensioned and arranged to be held by a human hand for suspending said bar when said hooks are moved toward each other and extend in the long direction of said bar.

4,308,963

SHELVES

Anthony C. Worrallo, 15, Sprott Rd., Kohimarama, Auckland 5, New Zealand

Filed Dec. 17, 1979, Ser. No. 104,020
Int. Cl.³ B32B *23/02*
U.S. Cl. 211—153 **3 Claims**



1. A shelf having upper and lower major faces, one longitu-

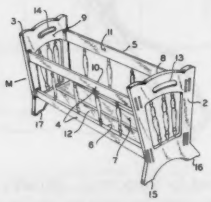
dinally extending edge of the shelf being formed with a smooth curve having a radius about a longitudinal line through the shelf such that it merges smoothly with said upper major face and intersects said lower major face, and the other longitudinally extending edge of the shelf being formed with a smooth curve having a radius about a longitudinal line through the shelf such that it merges smoothly with said lower major face and intersects said upper major face, the finish of said upper major face and said one edge being different from the finish of the lower major face and said other edge.

4,308,964

MAGAZINE RACK

Nicholas W. Keller, Lower Burrell, Pa., assignor to Action Industries, Inc., Cheswick, Pa.

Filed Aug. 2, 1979, Ser. No. 63,160
Int. Cl.³ A47F 3/14
U.S. Cl. 211—126 **2 Claims**



1. A rack for magazines and other paper articles which may be assembled separate fastening means, comprising:

(a) a pair of vertical end panels disposed in spaced relation so as to form opposed front and rear article retaining surfaces;

(b) a pair of spaced vertical side panels, each of said pair, being attached edgewise to said front and rear article retaining surfaces, and having an integral horizontal inwardly extending base ledge;

(c) lower stops protruding from both the front and rear article retaining surfaces below the base ledges such that the side panels are prevented from being downwardly displaced and resilient stops protruding from both the front and rear article retaining surfaces above the base ledges such that the resilient stops bear downwardly on the base ledge so as to prevent upward displacement of the side panels; and

(d) a releasable connecting means having a tongue and groove for attaching said side panels and end panels together such that said side panels together form both opposed side article retaining surfaces and a base article retaining surface.

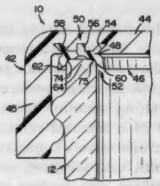
4,308,965

UNITARY CAP OF TWO DISSIMILAR MATERIALS

Herbert V. Dutt, Bradenton, Fla., assignor to Sun Coast Plastic Closures, Inc., Sarasota, Fla.

Filed Oct. 24, 1979, Ser. No. 87,662
Int. Cl.³ B65D 53/00
U.S. Cl. 215—345 **5 Claims**

1. A unitary cap of two dissimilar materials for containers, comprising a substantially rigid outer closure member and a substantially resilient inner sealing member secured thereto, said substantially rigid outer closure member including a top wall to extend over and cover a container mouth; and an annular side wall depending from the perimeter of said top wall and integrally formed therewith; said substantially resilient inner sealing member including a sealing means formed thereon to sealingly engage the container, said substantially resilient inner sealing member comprising a base element having an anchor means extending upwardly therefrom to secure said substantially resilient inner sealing member to said substantially rigid outer closure member, said anchoring means comprises an anchoring member disposed substantially perpendicular to said base element and a pair of anchoring members disposed angularly relative to said base element on opposite sides of said substantially perpendicular anchoring member.

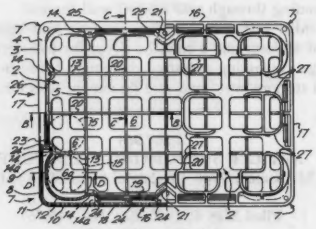


4,308,966

CRATES

Ernst Ettema, Hardenberg, and Coenraad J. B. Benraad, Dedemsvaart, both of Netherlands, assignors to Wavin B.V., Zwolle, Netherlands

Filed Mar. 5, 1980, Ser. No. 127,438
Int. Cl.³ B65D 1/24, 21/02
U.S. Cl. 220—21 **7 Claims**



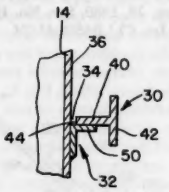
1. A substantially rectangular crate for a plurality of articles having cylindrical body portions, said crate having a base and side wall means and being provided with an internal partitioning grid said side wall means defining an upper rim of the crate of substantially uniform thickness and said base being provided with a plurality of downwardly extending formations defining therebetween channels for locating the rims of adjacent side wall portions of the side wall means of two similar crates arranged side-by-side and in stacked relationship with said crate, said side wall means including double-skinned corner portions, each of which defines with adjacent mutually perpendicularly extending portions of the partitioning grid a compartment for one of said articles and comprises an outer skin having mutually perpendicular portions and an inner skin spaced from said outer skin and formed adjacent each of said partitioning grid portions with a channel shaped rib extending away from the outer skin and vertically relative to said base, said side wall means further including double-skinned side wall portions which comprise spaced outer and inner skins and extend between said corner portions, further portions of said grid extending perpendicularly towards the inner skins of said side wall portions, each of at least the longer side wall portions having its inner skin formed adjacent at least one of said further grid partitioning portions with a channel shaped rib extending away from the outer skin thereof and vertically relative to the base, and the channel-shaped ribs of the side wall means are aligned substantially with said channels such that rims of adjacent side wall portions of two similar crates arranged side-by-side located in any one of said channels of said crate extend substantially under a said channel-shaped rib at each of such a channel.

4,308,967

PROTECTION RING FOR LIMITING THE WIDTH OF CRACKS IN A STORAGE TANK WALL

Richard A. Vater, Pittsburgh, and John Terlesky, New Brighton, both of Pa., assignors to Pittsburgh-Des Moines Corporation, Pittsburgh, Pa.

Filed May 22, 1980, Ser. No. 149,859
Int. Cl.[3] B65D *8/10, 90/00*
U.S. Cl. 220—71 16 Claims



1. A means of limiting the width of a crack which may occur in a vertical wall of a storage tank comprising:

a support means affixed to the wall;

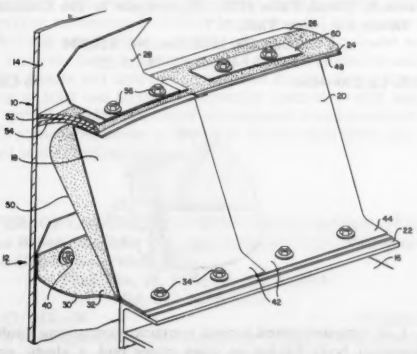
a protection ring which is horizontally disposed about the vertical wall which is supported by said support means in a manner which permits said support means and said protection ring to move independently of and relative to each other, said protection ring surrounding the vertical wall of a storage tank, said ring being spaced from such wall and defining an uninterrupted gap between said ring and any element of the wall so that said ring is structurally distinct from the wall, said ring unrestrainably surrounding the tank wall so that no force is applied to that wall by said ring until a crack in the wall causes that wall to expand a distance corresponding to the size of said gap, said ring abutting a cracked, expanded wall to prevent widening of that crack beyond a size determined by the size of said gap.

4,308,968

SECONDARY SEAL FOR TANK HAVING FLOATING ROOF

Roger W. Thiltgen, Cerritos; T. Richard Mathews, Los Alamitos, both of Calif., and Walter L. Hurst, Beaumont, Tex., assignors to H.M.T., Inc., Beaumont, Tex.

Filed Jun. 3, 1980, Ser. No. 155,929
Int. Cl.[3] B65D *88/42, 88/43*
U.S. Cl. 220—222 18 Claims



1. For use with a primary seal between the inner wall of a tank and a floating roof for the tank, a secondary seal comprising the combination of:

a flexible support arrangement mounted on and fastened to the floating roof, the support arrangement extending toward the inner wall of the tank and terminating in an outer edge having a length which is variable in response to flexure of the support arrangement toward and away from the inner wall of the tank;

a vapor barrier sealingly coupled to and extending between the floating roof and the outer edge of the support arrangement beneath the support arrangement; and

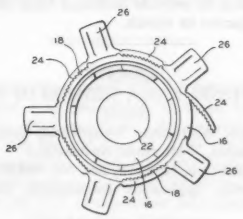
a plurality of flexible wipers mounted on the outer edge of the support arrangement along the length thereof and extending in the direction of the inner wall of the tank.

4,308,969

TAMPER INDICATING CLOSURE STRUCTURE

Jerome S. Heisler, and Anthony J. Starr, both of Wilmington, Del., assignors to Container Corporation of America, Chicago, Ill.

Filed Nov. 7, 1979, Ser. No. 92,204
Int. Cl.[3] B65D *47/10*
U.S. Cl. 220—266 3 Claims



1. In a tamper indicating closure structure for a container body having an internally threaded pouring spout provided with a ratchet surface disposed externally of and near the base of said pouring spout:

(a) an externally threaded closure for said pouring spout arranged for engagement with the threads of said pouring spout, said closure having a plurality of lugs disposed in an equally spaced manner around its outer surface;

(b) a plurality of pawl-like members supported by said closure between said lugs and arranged to override said ratchet surface during closing movement of said closure and to engage said ratchet surface during opening movement of said closure;

(c) each of said pawl-like members being connected to said closure by a pair of webs spaced longitudinally of each said pawl-like member and connected to said closure;

(d) both of said webs being capable of maintaining integrity during closing movement of said closure;

(e) one of said webs being ruptured upon opening movement of said closure;

(f) the other of said webs having its integrity with said closure maintained after such opening movement to give a visual indication that said closure has been subjected to an opening movement; and

(g) said closure includes a top wall with inner and outer annular flanges depending therefrom in a coaxial spaced relationship, said outer annular flange being threaded on its outer surface to connect with the internally threaded pouring spout when the closure is attached thereto and wherein a gasket is disposed around said outer flange and under said top wall so as to provide a sealing contact with the pouring spout during the closing movement.

4,308,970

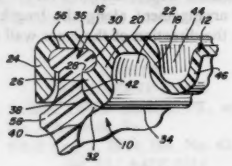
PLASTIC BUCKET DEFINING ANNULAR INWARDLY PROJECTING RIDGE

John W. Von Holdt, 7430 N. Croname Rd., Niles, Ill. 60648

Continuation-in-part of Ser. No. 963,736, Nov. 27, 1978, Pat. No. 4,210,258. This application Dec. 7, 1979, Ser. No. 101,220

Int. Cl.³ B65D *39/00*

U.S. Cl. 220—306 19 Claims



1. A plastic bucket having a lip at its mouth, said lip defining means for engaging a bucket lid in sealingly secured relation to said lip, the improvement comprising, in combination:

the interior wall of said bucket defining an annular, inwardly projecting ridge positioned adjacent to but spaced from said lip, said ridge extending around the inner circumference of said bucket and defining an annular, inwardly-pointed apex, to provide increased hoop strength to said bucket adjacent its mouth.

4,308,971

PRESSURE VESSEL AND A METHOD OF PRODUCING SAME

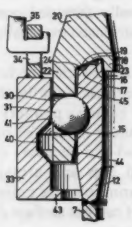
Hermann Straub, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Dec. 12, 1978, Ser. No. 968,867

Claims priority, application Switzerland, Dec. 20, 1977, 15716/77

Int. Cl.³ B65D *45/16*

U.S. Cl. 220—315 13 Claims



1. A pressure vessel comprising

a hollow member having a cylindrical end of predetermined outer diameter;

a cap having a cylindrical end of an outer diameter equal to said predetermined diameter;

a first thin ring element free of radial flanges welded to said end of said hollow member to form a vessel part, said first ring element having an outer diameter adjacent said hollow member equal to said predetermined diameter;

a second thin ring element free of radial flanges welded to said end of said cap to form a cover, said second ring element being disposed in overlapping relation with said first ring element and having an outer diameter adjacent said cap equal to said predetermined diameter; and

means for locking said overlapped ring elements together, said locking means including at least one groove in said first ring element, at least one radially disposed aperture in said second ring element, a locking element disposed in said aperture for movement between an unlocking position within said aperture and a locking position within said aperture and said groove, and an outer clamping ring about said second ring element and said aperture for moving said locking element from said unlocking position to said locking position.

4,308,972

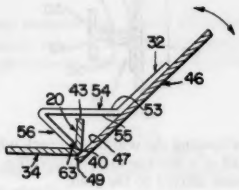
SEPARABLE HINGE ASSEMBLY FOR A DOOR

Billy L. McReynolds, and Richard L. Barnett, both of Altamont, Kans., assignors to Power-Flame, Inc., Parsons, Kans.

Filed Aug. 29, 1980, Ser. No. 182,652

Int. Cl.³ B65D *43/24*

U.S. Cl. 220—335 21 Claims



1. A hinge assembly for first and second panels, the combination comprising:

a first portion located on said first panel;

a lip extending substantially perpendicularly from said first portion;

a second portion located on said second panel;

a hinge member; and

means for rigidly coupling said hinge member to said second panel,

said hinge member comprising

an arm, and

an intermediate portion extending from said second panel and having said arm extending therefrom towards and substantially perpendicular to said second portion,

said arm having a distal edge forming a slot with said second portion, which slot receives a portion of said lip therein when said first and second portions are substantially perpendicular, and receives a portion of said first portion therein when said first and second portions are substantially parallel.

4,308,973

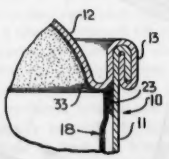
COMPARTMENTED AEROSOL CONTAINER

Lewis F. Irland, Palos Hills, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Filed Jun. 30, 1978, Ser. No. 921,034

Int. Cl.³ B65D *25/14, 35/28*

U.S. Cl. 220—454 6 Claims



1. A compartmented aerosol container comprising a tubular container body having an open upper end, a plastic pouch having a closed lower end and an open upper end, said plastic pouch being telescoped within said container body with said plastic pouch upper end being disposed adjacent said container upper end in recessed relation thereto, and a sealed bond be-

tween the exterior of said plastic pouch at said plastic pouch upper end and the interior of said container body, said plastic pouch defining a first compartment for a product, and said container body in conjunction with said plastic pouch defining a second compartment for a propellant, said bond being in the form of an applied adhesive on the interior of said container body, said container body having the open upper end thereof closed by an end unit, and said end unit being in sealed contact with said adhesive.

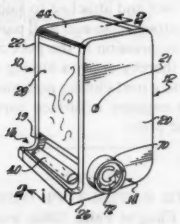
4. A compartmented aerosol container comprising a tubular container body having an open upper end, a plastic pouch having a closed lower end and an open upper end, said plastic pouch being telescoped within said container body with said plastic pouch upper end being disposed adjacent said container upper end in recessed relation thereto, and a sealed bond between the exterior of said plastic pouch at said plastic pouch upper end and the interior of said container body, said plastic pouch defining a first compartment for a product, and said container body in conjunction with said plastic pouch defining a second compartment for a propellant, said plastic pouch being of a laminated construction and including polypropylene outer layers and a saran inner layer.

4,308,974

TAMPON DISPENER

Linda M. Jones, 1508 Stanford Way, Sparks, Nev. 89431

Filed Feb. 29, 1980, Ser. No. 125,910
Int. Cl.³ B65H *3/00*
U.S. Cl. 221—196 **1 Claim**



1. Tampon storage and dispensing means comprising in combination: a container suitable to hold a plurality of tampons; shelf means disposed within said container means and at a distance from the lower portion thereof suitable to guide tampons in a horizontal position; tampon holding means adjacent the lower edge of said container; tampon dispensing apparatus comprising an elongated cylindrical cylinder mounted intermediate said shelf means and said holding means, and comprising an elongated cylinder having located therein tampon holding means; means to rotate said elongated cylinder so as to move one tampon from the area of said shelf means to said holding means; and tampon agitating and moving means comprising at least one stretchable member associated with said shelf and intermediate said shelf and tampons in said container, which stretchable means is caused to be stretched upon rotation of said cylinder member.

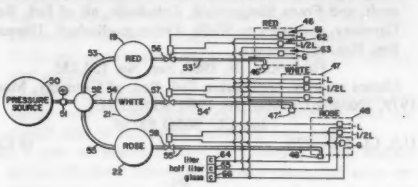
4,308,975

BEVERAGE COOLING AND DISPENSING APPARATUS

E. Lee Bowen, Michigan City, Ind., assignor to Tyler Refrigeration Corporation, Niles, Mich.

Filed Nov. 29, 1979, Ser. No. 98,613
Int. Cl.³ B67D *5/22*
U.S. Cl. 222—36 **9 Claims**

1. A beverage cooling and dispensing apparatus comprising a cabinet having a first internal compartment all of the walls of which are insulated against heat exchange and wherein a number of different receptacles each containing a relatively large quantity of beverage may be removably disposed, means in said cabinet providing an adjacent second internal compartment, means providing a self-contained refrigeration system within said cabinet including a cooling device for continually providing cooled air in said first compartment whereby said first compartment may be maintained at a desired low temperature, said refrigeration system comprising operatively interconnected compressor, cooling coil and condenser units with the compressor and condenser being mounted in said second compartment and said cooling coil being comprised in said



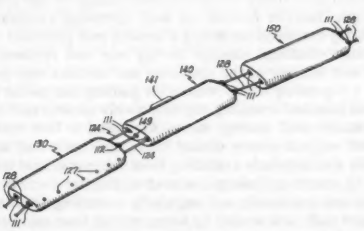
cooling device and disposed in said first compartment, a plurality of externally located dispensing heads projecting from said cabinet, one for each receptacle, means including conduit means for providing a pressurized beverage flow path between each receptacle and its associated dispensing head, and selectively operated control means for each path including timed selector means in each head whereby any of a plurality of different relatively small quantities from each receptacle may be dispensed.

4,308,976

PERSONAL PROTECTIVE DEVICE

Eugene M. Speer, P.O. Box 13745, Orlando, Fla. 32809, and Paul G. Hahn, 693 Granville Dr., Winter Park, Fla. 32789

Division of Ser. No. 944,636, Sep. 21, 1978, Pat. No. 4,241,850, which is a continuation of Ser. No. 633,124, Nov. 18, 1975, abandoned. This application Dec. 19, 1979, Ser. No. 105,012
The portion of the term of this patent subsequent to Dec. 30, 1996, has been disclaimed.
Int. Cl.³ B67B *7/24*
U.S. Cl. 222—78 **9 Claims**



1. A personal protective repellent dispensing device comprising a belt having an exterior housing member of of attractive appearance which is conveniently worn by a person in a readily accessible manner and which disguises the nature of the device, container means for containing a fluid substance of foul and repulsive nature secured within the exterior housing member, said exterior housing member having outlet openings to the exterior thereof communicating with said containing means, selectively controllable puncture pin means movable with respect to said container means for puncturing the container and releasing a fluid substance contained therein through the outlet openings under the control of a person wearing the device, actuation cord means fixed to the remainder of the belt for selectively moving the puncture pin means relative to the container upon a person wearing the device pulling on the belt with a given amount of force required to relatively move the puncture pin means and the container to thereby puncture the container and release the fluid, and posi-

tive acting safety catch means for positively preventing inadvertent relative movement between the puncture pin means and the container.

4,308,977

DISPENSING DEVICE WITH ONE-HAND OPERATION FOR PASTY SUBSTANCES

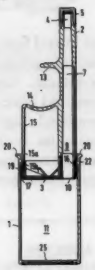
Ludwig Sigmund, Pfungstadt; Norbert Golzer, Darmstadt-Eberstadt, and Franz Steigerwald, Griesheim, all of Fed. Rep. of Germany, assignors to Wella Aktiengesellschaft, Darmstadt, Fed. Rep. of Germany

Filed Mar. 24, 1980, Ser. No. 133,135

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1979, 7908402[U]; Mar. 20, 1980, 8007552[U]

Int. Cl.³ B65D *88/58*

U.S. Cl. 222—320 **18 Claims**



1. A dispensing device with one-hand operation for pasty substances, comprising a cup-shaped cylindrical container for a pasty substance; a piston having a peripheral wall and being displaceable within said container, said container having a longitudinal axis and an internal wall defining the interior of the container and terminated with an open end; sealing means fixedly attached to said piston and adapted to conjointly act with said internal wall; an operating extension fixedly attached to said piston and extending in an axial direction beyond said open end to be freely accessible from outside of said container; two grip handles formed on said operating extension; said operating extension including a central part provided with an internal cylindrical passage having one end communicating with said interior of the container and another end provided with a dispensing nozzle; means for guiding said piston parallel to said axis; and a sealing cap selectively closing said dispensing nozzle, said sealing means including a first sealing lip formed on said piston distant from said open end and outwardly and angularly extending from said peripheral wall, said guiding means including a second sealing lip formed on said piston and outwardly and angularly extending from said peripheral wall, said second lip being spaced from said first lip in the axial direction and being formed adjacent said open end, said internal wall including a projection radially inwardly extending therefrom said positioned in the vicinity of said open end, said central part having a peripheral rib adapted to engage with said projection.

4,308,978

DISPENSING DEVICE

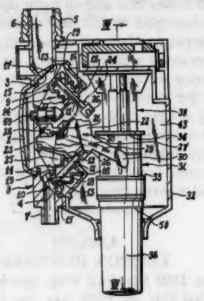
Peter K. Bayly, Eltham North, and John E. Oretti, Doncaster, both of Australia, assignors to Peter Bayly Associates Australia Pty. Ltd., Australia

Filed Jan. 24, 1980, Ser. No. 114,897

Int. Cl.³ G01F *11/38*

U.S. Cl. 222—449 **28 Claims**

1. A dispenser device including, a metering chamber having a wall part, an inlet port and an outlet port, an inlet valve operative to open and close said inlet port in fill and discharge conditions respectively of said metering chamber, an outlet valve operative to close and open said outlet port in said fill and discharge conditions respectively, and actuator means operative to cause movement of said valves to effect a change of the said conditions of said metering chamber, the arrangement being such that said inlet valve closes said inlet port before said outlet valve opens said outlet port during a change from said fill condition to said discharge condition, each of said valves being independently mounted for movement relative to said metering chamber and including a stem slidably mounted in said wall part of said metering chamber, a head portion



located within said chamber, and a resilient sleeve which has an end wall at one end and is open at its other end, said end wall being located over and attached to said head portion and said open end being attached to said wall part, said sleeve being subjected to axial compression in the port open position of its respective valve to thereby apply a biasing force which urges said head portion into a port closing position in which said end wall of said sleeve engages a surface surrounding a corresponding one of said ports.

4,308,979

PRE-ORIENTED ROTOR-TYPE DISPENSER TOP

Lewis L. Otterson, Chagrin Falls, Ohio, assignor to Weatherchem Corporation, Twinsburg, Ohio

Filed Dec. 7, 1979, Ser. No. 101,094

Int. Cl.³ B65D *47/06*

U.S. Cl. 222—516 **1 Claim**

1. A two-piece end closure for a container comprising a stationary base for attachment to the container, said base having a central flat web portion, a discharge opening in said central flat web portion at one side thereof, a generally flat-bottomed cap rotatably mounted over said central web portion of said base for selectively covering and opening said discharge opening, a rotative interconnection between said cap and said base at the center of said flat web portion of said base and tending to snugly retain the bottom surface of said generally flat-bottomed cap against the top surface of said central flat web portion of said base in face-to-face contact therewith, a plug depending from said flat bottom of said rotatable cap and, at one rotative position of said cap, projecting into a socket in

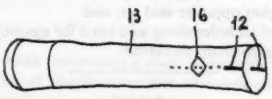
said flat wall portion to thereby act as a detent against rotation to define one rotative position of said end closure, said cap being resiliently deformable from said face-to-face contact to allow said plug to ride on the top surface of said central web portion at all other rotative positions of said cap, said end closure as so constructed providing means for detentive resisting of rotation of the cap at said one rotative position out of the entire 360 degrees and allowing rotation free of detentive resistance up to said one position from all other rotative positions throughout the entire 360 degrees, said rotatable cap being of circular shape whereby a circular area of said top surface of said central flat web portion of said base is overlain by said cap in all rotative positions of said cap to thereby, throughout said circular area, shield said base from contact from above by any rotating member brought down into driving contact with said cap and thus limit driving contact, by any such member, to contact with said cap to the exclusion of said base, the sides of said plug and socket having substantially vertical walls abutting in one direction of rotation and having angular ramps wedging one upon the other for disengagement of the plug from the socket in the other direction of rotation, said socket and said discharge opening being one and the same, said one rotative position being the closed position of said end closure.

4,308,980

POSITIONING DEVICE FOR TUBULAR HOSE

Vinicio Gazzarrini, Tavarnuzze, Italy, assignor to Solis S.r.l., Tanarnuzze, Italy

Filed Feb. 6, 1980, Ser. No. 119,130
Claims priority, application Italy, Feb. 7, 1979, 9339 A/79
Int. Cl.³ A41H *43/00*; D05B *21/00*
U.S. Cl. 223—43 **7 Claims**



1. A device for automatic positioning of the tip of a tubular stocking which is to be sewn together with the heel portion thereof onto a pneumatic inverter tube having an open mouth forming part of a pneumatic inverter of a machine for sewing stocking tips, the stocking having an indexing mark thereon, comprising in combination:

a rotatable tubular stocking support disposed substantially coaxially with and loosely around said inverter tube whereby said tubular support is axially rotatable with respect to said inverter tube;

drive means operable to rotate said tubular support;

control means operable to control the operation of said rotating means in response to a control signal; and,

index responsive means connected to said control means and operable to generate the control signal for said control means in response to a predetermined relative positioning of the indexing mark on the stocking to move and to hold a stocking disposed over said tubular support in the predetermined relative position whereby the stocking will be properly oriented for sewing.

4,308,981

CLIP HANGER

Shozo Miura, 1012 Osayuki, Kokuraminami-Ku, Kitakyushu-shi, Fukuoka, Japan

Filed Nov. 16, 1979, Ser. No. 95,046
Claims priority, application Japan, Jun. 30, 1978, 53-90981
Int. Cl.³ A47J *51/142*
U.S. Cl. 223—96 **6 Claims**

1. A clip hanger for clamping trousers or skirts comprising:

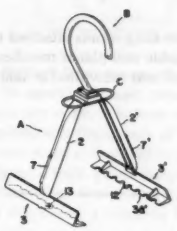
(1) a clip body molded as a single integral piece of plastic having the following elements,

(a) a hook mounting base, said base having an opening at the center of said hook mounting base and two lateral protrusions extending upwardly from the upper surface of said mounting base, said protrusions being equally spaced apart from each other with said opening being located between said two protrusions,

(b) a pair of elongated clamp arms symmetrically extending downwardly from opposed sides of said hook mounting base, each of said clamp arms having a thick U-shaped cross section for producing sufficient rigidity and resiliency,

(c) a pair of thin flexible flat joint members connecting the upper ends of said elongated clamp arms to said opposed sides of said hook mounting base, and

(d) a pair of lateral clamps of L-shaped cross section perpendicularly connected to said elongated arms respectively, said lateral clamps having free ends so that when the clamp arms are closed, the free ends face each other,



(2) hook means molded as a single integral piece of plastic, said hook means including a shaft portion disposed in said opening formed in said hook mounting base, said shaft portion having a square member disposed above said opening, the width of said square member being narrower than the space between said lateral protrusions and the diagonal length of said square member being wider than said space so that when said square member is located between said two lateral protrusions, free rotation of said hook means is precluded but said hook means is manually and forcibly rotatable when desired as said square member resiliently engages said two lateral protrusions,

(3) an elongated plastic circular loop releasably and slidably disposed around said pair of elongated clamp arms for exerting a clamping force between the free edges of said lateral clamps, said loop having a longitudinal width which is narrower or equal to the distance between the outer peripheries of said clamp arms when said lateral clamps are completely engaged with each other and a lateral inner width equal to the width of said clamp arms, whereby said clamp hanger can firmly hold said trousers or skirts by the coupling operation of the resiliency of said elongated clamp arms and said elongated circular loop.

4,308,982

SKI EQUIPMENT CARRIER

Scarlette J. Hall, Rte. 5, Box 407-A9, Stillwater, Okla. 74074

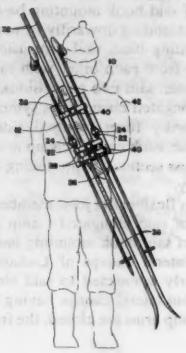
Filed Feb. 25, 1980, Ser. No. 124,260
Int. Cl.³ A45C *11/38*
U.S. Cl. 224—202 **2 Claims**

1. An apparatus for carrying elongated equipment, such as, snow skis and poles, at a diagonal angle across the back of an individual being comprised of:

a planar member one side of which will rest against said individual's back, said member having a plurality of parallel pairs of holes therethrough said planar member;

strap and buckle means extending through each pair of said

holes and around said elongated equipment to secure said equipment to the other side of said planar member; and



a single adjustable sling means attached to said planar member so as to enable said planar member to be carried over one shoulder of said individual at said diagonal angle.

4,308,983

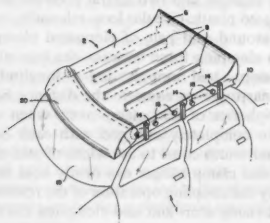
CARRIER FOR A MOTOR VEHICLE

Minoru Yoshida, 1629 S. La Brea Ave., Apt. #5, Los Angeles, Calif. 90019

Continuation-in-part of Ser. No. 50,683, Jun. 21, 1979, abandoned. This application Nov. 5, 1980, Ser. No. 204,171

Int. Cl.³ B65D *35/00*; B62D *37/02*

U.S. Cl. 224—316 **4 Claims**



1. A carrier for a roof of a motor vehicle comprising:

a planar, curved supporting member which is substantially the same size as the roof of said motor vehicle;

a plurality of ribs formed integrally and longitudinally on an undersurface of said supporting member for reinforcing the supporting member and for engaging with and for spacing the supporting member from the roof of the motor vehicle;

means for coupling the supporting member to the motor vehicle; and

an adjustable visor attached to the front portion of said supporting member, said visor being movable between an up-position and a down-position.

4,308,984

JET-CONVEYOR BOX FOR FLOATINGLY GUIDING A CONVEYED STRIP OR SHEET MATERIAL

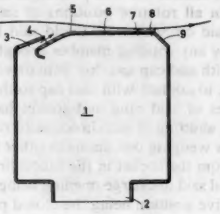
Hilmar Vits, Leichlingen, Fed. Rep. of Germany, assignor to Vits Maschinenbau GmbH, Langenfeld, Fed. Rep. of Germany

Filed Mar. 3, 1980, Ser. No. 126,365

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1979, 2911685

Int. Cl.³ B65H *17/32*

U.S. Cl. 226—97 **11 Claims**



1. A jet conveyor box for floatingly guiding a conveyed strip of material, said box having

a slit-type jet having at least one orifice for ejecting propelling medium therefrom;

a guide surface adjoining said slit-type jet for guiding and directing the medium ejected through said jet, said guide surface including a substantially plane region adjacent said jet and a bent region disposed at an angle of from 30° to 60° relative to said plane region to define a bend therewith, said bent region being disposed on a side of said plane region opposite said jet; and

a plurality of jet holes along said bend for ejecting additional propelling medium therefrom.

4,308,985

TRAY CONTAINER WITH REINFORCED SIDEWALLS

Guelfo A. Manizza, Blauvelt, N.Y., and William M. Brown, Darien, Conn., assignors to Federal Paper Board Company, Inc., Montvale, N.J.

Filed May 12, 1980, Ser. No. 148,908

Int. Cl.³ B65D *5/26*

U.S. Cl. 229—31 R **6 Claims**

1. A container in the form of a tray for processing and packaging a loaf of bread or similar bakery product, said tray being formed from a single sheet of paperboard having a heat sealable and heat resistant film coating with a greater shrinkage characteristic than the paperboard material under heating and cooling conditions, said tray comprising a bottom wall panel, integral upstanding sidewall panels, folded triangular webs joining the ends of adjacent sidewall panels, with pairs of said webs secured to the outside faces of oppositely disposed sidewall panels, said sidewall panels having outwardly directed

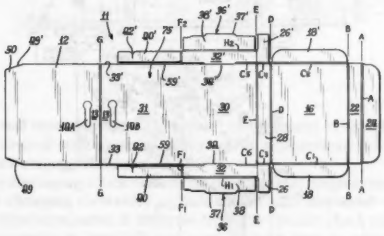
narrow flange formations at the top edges thereof and said connecting triangular webs having a top flange formation adhesively secured to the bottom face of the top edge flange formation on the sidewall to which said triangular webs are secured and said sidewall panels having a line of skip-cutting at the top hinge edge thereof with the cuts severing the film material but not through the paperboard so as to reduce buckling in the sidewalls which would otherwise occur due to the difference in shrinkage of the film and the paperboard material when the tray is heated and allowed to cool.

4,308,986

TUCK BOX WITH HEADER CARD

Gerard A. Parrilli, 1217 Arlington Dr. East, Hanover Park, Ill. 60103

Filed Apr. 3, 1980, Ser. No. 136,875
Int. Cl.³ B65D 5/22
U.S. Cl. 229—33 13 Claims



1. A box blank comprising a sheet of foldable material having a plurality of panels, flaps and tabs defined between the margins thereof and score lines therein;

(a) said sheet having a first total length dimension greater than a second overall width dimension to form a generally rectangular blank in said sheet and being bound by a first and a second end margin and at least two side margins;

(b) said first end margin having a tuck flap defined between said first end margin and a first fold line spaced therefrom;

(c) said first tuck flap having joined thereto along said first fold line a top panel defined by a second fold line spaced from said first fold line;

(d) said top panel having joined thereto along said second fold line a front panel defined by a third fold line spaced from said second fold line;

(e) said front panel having joined thereto a bottom panel along said third fold line, defined by a fourth fold line spaced therefrom;

(f) said bottom panel having joined thereto a back panel along said fourth fold line defined by a fifth fold line spaced therefrom;

(g) said back panel being divided into a first portion and a second portion where said first portion is adjacent the fourth fold line and said second portion is adjacent the fifth fold line;

(h) said back panel having joined thereto a header card defined between said fifth fold line and the second end margin; and

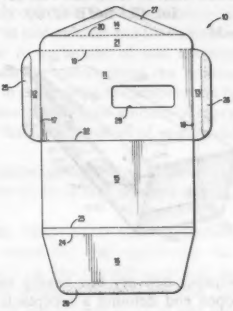
(i) said back panel having joined thereto along each side margin of the first portion, a side wall locking means and a top wall locking means, whereby when said box blank is constructed said side wall locking means and said top wall locking means interact with said panels, tuck flap and header card to form a fully formed box.

4,308,987

REMAILABLE ENVELOPE

Merrill Solomon, 7609 Glackens Dr., Potomac, Md. 20854

Filed Jan. 22, 1980, Ser. No. 114,404
Int. Cl.³ B65D 27/06
U.S. Cl. 229—73 16 Claims



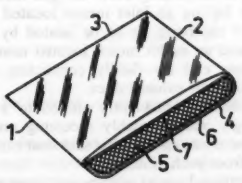
1. An envelope formed from an envelope blank which is symmetrical about its center line, said envelope comprising a front panel having a top edge, a bottom edge and two side edges; a pair of opposed side flaps, each of which is integrally connected to said front panel at first fold lines along one of said front panel side edges; a back panel integrally connected to said front panel bottom edge at a second fold line and having a top edge and two side edges; a resealing flap integrally connected to said back panel top edge at a third fold line; a top flap integrally connected to said front panel top edge at a fourth fold line; first adhesive means for securing said side flaps in overlying relation to said back panel folded along said front panel bottom edge to overlie a portion of the inner face of said front panel; second adhesive means for securing said top flap in overlying relation to the outer face of said back panel to seal the envelope for first mailing; and third adhesive means for securing said resealing flap in overlying relation to the outer face of said front panel to seal the envelope for second mailing.

4,308,988

ENVELOPE

Jan Jiveman, 30 Girestavägen, Upplands Väsby, Sweden (S-194 51); Raymond Bengtsson, 33 Östbergshöjden, Älvsjö, Sweden, S-125 37 Rasit Kaya, 38 Kavallerigatan, Upplands Väsby, Sweden (S-194 33), and Rune Bengtsson, 54 Stamgatan, Älvsjö, Sweden, S-125 39

Filed Apr. 16, 1980, Ser. No. 140,805
Claims priority, application Sweden, Apr. 24, 1979, 7903592
Int. Cl.³ B65D 27/14
U.S. Cl. 229—80 8 Claims



1. An envelope of plastic sheet material provided with a flap, the plastic sheet material being a thermoplastic sheet, which is laminated to a sheet of a hydrophilic material at least on a side forming an outside of the envelope, and the flap of the enve-

lope being laminated to a paper layer at least on an inside of the flap, said layer supporting a gumming.

4,308,989

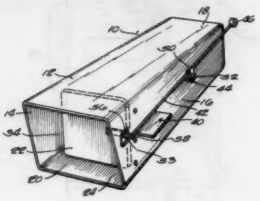
SIGNAL FLAG FOR NEWSPAPER CONTAINER

Richard R. Elsinger, Box 45, Woodland, Wis. 53099

Filed Mar. 6, 1980, Ser. No. 127,625

Int. Cl.³ B65B *91/00*

U.S. Cl. 232—34 **3 Claims**



1. In a newspaper delivery box having side walls, an end wall and an open end defining a receptacle for receiving a newspaper, the improvement comprising an actuator, means for pivotally mounting the actuator in the interior of said box and positioned relative to the entrance of the box to insure displacement of said actuator when a newspaper is inserted, an opening in a side wall of said receptacle, and catch means connected to said actuator and extending laterally outwardly of said receptacle through said opening and a signal member having a portion engageable with said catch means to be retained in a retracted position beneath said catch means, and means pivotally mounting said signal member to said side wall, said catch means including cam surface means engageable with said signal member portion, said cam surface means being operable to displace said portion laterally outwardly of said catch means to facilitate positioning said signal member portion beneath said catch means in a locking position, and means to bias said signal member to an erect position visible from some distance so that upon release from said catch said signal member will be released to move to the signal position.

4,308,990

FLUE GAS HEAT RECOVERY SYSTEM

Anton Borovina, 67 N. Columbia St., Port Jefferson Station, N.Y. 11776; Henry E. Grattan, Box 531 Strongs Neck, Setauket, Long Island, N.Y. 11733, and Mark Borovina, 67 N. Columbia St., Port Jefferson Station, N.Y. 11776

Filed Jan. 17, 1980, Ser. No. 112,869

Int. Cl.³ F24F *11/04*; F28F *27/00*

U.S. Cl. 236—10 **8 Claims**

1. A flue gas heat recovery system for use in heating a building comprising:

a tubular heat exchanger having a plurality of pipes therein fluidly connected to a flue pipe of a furnace to receive hot gas therefrom, said pipes being fluidly connected to a chimney for dispensing such hot gas thereto, said heat exchanger having an inlet means located near one end thereof for receiving air to be heated by said heat exchanger, and an outlet means located near said heat exchanger one end for fluidly connecting said heat exchanger to an air exhaust duct;

an annular sleeve permanently affixed to a chimney and telescopingly and releasably receiving one end of said tubular heat exchanger so that said heat exchanger can be removed from such chimney;

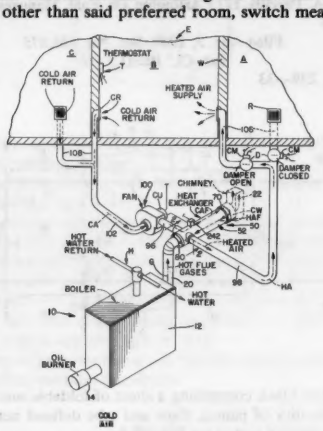
a planar partition located within said heat exchanger and extending from said heat exchanger one end to adjacent another end of said heat exchanger, said partition having one edge thereof spaced from said heat exchanger another end to define a gap and being in contact with said heat exchanger at all other edges thereof so that fluid communication across said partition is established only via said gap, said partition being oriented to be at essentially a right angle with respect to the flow direction of air flowing through said inlet and outlet means, said partition creating turbulence in air to be heated by said heat exchanger as such air flows through said heat exchanger and causing such air to traverse essentially the entire length of said heat exchanger approximately twice in flowing from said inlet means to said outlet means;

air moving means connected to said inlet means for moving air to be heated into said heat exchanger;

a plurality of dampers, each damper controlling air flow in an individual room of a plurality of rooms in a building, one room of said plurality of rooms being a preferred room;

air conduits connecting the furnace to each of said rooms; and

a control circuit connected to the furnace and to said dampers, said control circuit including a thermostat in each room other than said preferred room, switch means con-



nected to said dampers and to said thermostats, said switch means having one position associated with each damper connecting a power source to said each damper to activate that damper to permit air to flow from an air conduit associated therewith into a room associated therewith, and control means causing said switch means to move into said one position in response to a signal from a thermostat associated with a room, said control means maintaining said switch means in an orientation which permits air flow from the furnace to said preferred room unless a signal from a thermostat is received by said control means so that air from the furnace is normally directed to said preferred room unless the temperature in one of the other rooms drops to a level which causes actuation of a thermostat in said one room at which time air from the furnace is directed to said one room until the temperature in that room rises to a level which causes the thermostat in that one room to signal said switch means so that air from the furnace is returned to said preferred room.

4,308,991

PROGRAMMABLE ELECTRONIC THERMOSTAT

Donald L. Peinetti, San Diego, Calif., and Dennis M. Rippelmeyer, Waterloo, Ill., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Jul. 7, 1980, Ser. No. 166,748

Int. Cl.³ F23N *5/20*; G05D *23/00*

U.S. Cl. 236—46 R **2 Claims**

1. An improved method for programming a programmable electronic thermostat having pre-programmed time and temperature data stored therein including starting times and set-

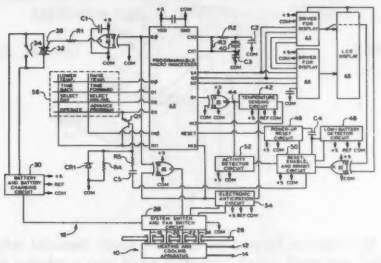
point temperatures for a plurality of chronologically arranged time periods, comprising the steps of:

(a) displaying on display means the stored starting time and set-point temperature for a first of the plurality of chronologically arranged time periods;

(b) changing forwardly or backwardly said displayed starting time, if different from a desired starting time, to establish said desired starting time for said first time period;

(c) raising or lowering said displayed set-point temperature, if different from a desired set-point temperature, to establish said desired set-point temperature for said first time period;

(d) displaying on said display means the stored starting times and set point temperatures of each subsequent time period of said plurality of chronologically arranged time periods



and repeating steps (b) and (c) of this claim to establish a desired starting time and set-point temperature for each subsequent time period;

(e) displaying clock time in minutes on said display means;

(f) changing forwardly or backwardly said displayed clock time in minutes, if different from the correct clock time in minutes, to establish said correct clock time in minutes;

(g) displaying clock time in hours on said display means;

(h) changing forwardly or backwardly said displayed clock time in hours, if different from the correct clock time in hours, to establish said correct clock time in hours;

(i) displaying a designation of the day of the week;

(j) changing forwardly or backwardly said displayed day of the week, if different from the correct day of the week, to establish said correct day of the week; and

(k) placing the thermostat in an operative mode.

4,308,992

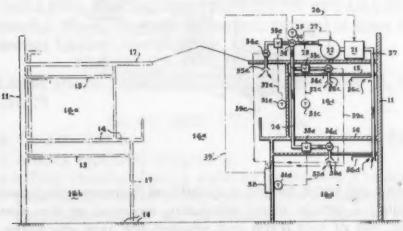
METERED-USAGE VARIABLE-VOLUME AIR DISTRIBUTION SYSTEM

Donald B. Horton, 4229 Dogwood Ave., Seal Beach, Calif. 90740

Continuation-in-part of Ser. No. 54,686, Jul. 5, 1979. This application Aug. 15, 1980, Ser. No. 178,400

Int. Cl.³ F24F *7/00*

U.S. Cl. 236—49 **9 Claims**



1. In combination with a system for controlling the temperature in each of a plurality of area modules in a building, said system including regulatable heat-transfer means common to all of said modules for adjusting the temperature of air to a preset value, air conveyance ducts connected between said heat-transfer means and each of said modules, air impelling means impelling air through said heat-transfer means and into said ducts, and, associated with each of said modules, separate, independently operable valve means in the duct between said heat-transfer means and said module for varying the volume of air flowing from said heat-transfer means into said module and separate, selectively operable thermostat means for sensing the temperature of air in said module and for controlling said valve means in response to variations of said temperature from a preset value, means for determining the relative amount of energy consumed in controlling the temperature in each of said modules with respect to the total amount of energy consumed in controlling the temperature in all of said modules, comprising:

first means for ascertaining the cumulative volume of such air attributable to all of said modules during a given period; and

second, separate, independent means associated with each module for measuring and registering the cumulative volume of such air flowing into each said module during said period for comparison with the said cumulative volume of such air attributable to all of said modules during said period.

4,308,993

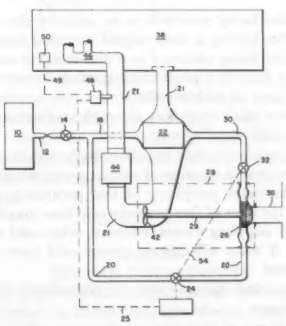
HEATING SYSTEM

Linus B. Buss, Fountain Valley, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Nov. 1, 1979, Ser. No. 90,190

Int. Cl.³ G05D *23/00*

U.S. Cl. 237—2 A **31 Claims**



1. A method for heating an enclosure comprising the steps of:

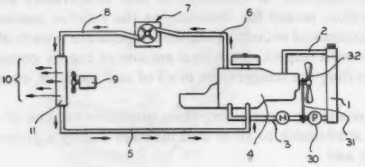
a. supplying air from a hot high pressure compressor bleed source through either a heat exchanger or a heat exchanger bypass duct and then through a turbine to drive the turbine and a fan connected for rotation therewith; and

b. drawing air from the enclosure through the heat exchanger with the fan for heat exchange with the heat exchanger and for further heating of the air from the enclosure and for returning that air to the enclosure.

4,308,994
ENERGY SAVING CIRCULATING SYSTEM FOR VEHICLE HEATERS

Francis J. Perhats, Barrington, Ill., assignor to Autotherm, Inc., Barrington, Ill.

Continuation-in-part of Ser. No. 911,661, Jun. 1, 1978, abandoned. This application Jul. 23, 1979, Ser. No. 59,945
Int. Cl.³ B60H *1/02*
U.S. Cl. 237—12.3 B **2 Claims**



1. An energy-saving, pressurized hot liquid circulating system to circulate hot liquid from a liquid-cooled vehicle engine through the vehicle's heater, said vehicle of the type having an electric storage battery to energize certain of the vehicle's accessories, and having a hot liquid circulating system of the type including a radiator, engine liquid jacket, and said heater, said system comprising:

means to pump said hot liquid through said vehicle heater when said engine is turned off,

said pump means receiving its driving power solely from said vehicle battery;

conduit means coupling said vehicle heater to said liquid jacket,

said pump means positioned in series with said conduit means intermediate said vehicle heater and said liquid jacket,

said pump means being of the centrifugal type having a motivating impeller driven responsive to the rotation of a drive shaft of an electrical motor,

means for magnetically coupling said motor shaft to drive said impeller,

said magnetic coupling means adapted to drive said impeller without requiring said motor shaft to pass through said conduit,

said impeller being mounted on an impeller shaft,

said impeller having a base magnet attached thereto,

said impeller being enclosed in a non-metallic casing,

said casing having a protruding portion for receiving said base magnet of said impeller,

said impeller shaft extending through said cylindrical magnet and said impeller; and

means for mounting said impeller shaft entirely within said casing to enable rotation of said magnetic coupling means about the outer periphery of said protrusion to thereby shorten the lines of flux between said base magnet and said magnetic coupling means whereby, when said motor shaft rotates, it more effectively causes said base magnet to rotate; and

means to control the operation of said vehicle fan and said pump means,

said control means including an electrical relay,

said relay operated responsive to the operating or non-operating of said engine,

first and second normally closed contacts on said relay,

said first contacts connected in series between said battery and said pump means, and

said second contacts connected in series between said battery and said vehicle fan,

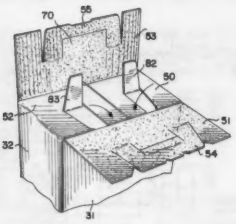
said relay directing electrical current to said fan when said engine is non-operating,

said control means further including relatively, non-resistive intermittenly operating switching means to control the speed of said vehicle fan when said second contacts are closed, in order to minimize power drain of said battery, said first contacts directing electrical current to said pump means to operate said pump means when said engine is non-operating.

4,308,995
CARTON END CLOSURE WITH INTEGRAL HANDLE

Harry R. Hanes, Ramsey, N.J., assignor to Federal Paper Board Company, Inc., Montvale, N.J.

Filed Mar. 25, 1980, Ser. No. 133,912
Int. Cl.³ B65D *5/46, 25/28*
U.S. Cl. 229—52 B **8 Claims**

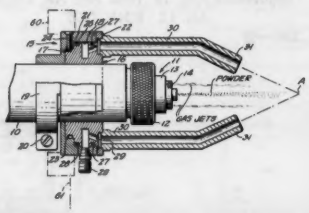


1. In a carton formed of foldable sheet material which is divided into wall panels and connected into a tubular formation, an end closure structure which comprises a pair of innermost closure panels extending inwardly from the top edges of oppositely disposed sidewall panels and a pair of outer closure panels extending inwardly from oppositely disposed adjoining sidewall panels in overlying relation with each other, said end closure structure including a multi-panel handle forming structure which is derived by cutting and folding into face engaging relation generally U-shaped handle forming portions of said outer closure panels and positioning therebetween a handle reinforcing means extending outward from each of the innermost closure panels and secured betwen said U-shaped handle forming portions.

4,308,996
ADJUSTABLE HEAD FOR SELECTIVELY SHAPING A FLAME-SPRAY DISCHARGE

Anthony J. Rotolico, Hauppauge, N.Y., assignor to Eutectic Corporation, Flushing, N.Y.

Filed Mar. 17, 1980, Ser. No. 131,199
Int. Cl.³ B05B *1/28*
U.S. Cl. 239—290 **20 Claims**



1. In a gas torch having a cylindrical flame-spraying nozzle including a nozzle insert releasably mounted at the downstream end of said torch and adapted for axial discharge of powder material centrally of a surrounding annulus of axially discharged combustible-gas mixture, the improvement comprising circumferentially continuous manifolding means including an annular ring rotatably mounted to and wholly surrounding said nozzle, said manifolding means being adjust-

ably rotatable about said nozzle and independent of the releasable mount of said nozzle insert, a plurality of angularly spaced jet conduits carried by said ring and communicating with said manifolding means, said jet conduits extending in the downstream direction and discharging downstream, from locations downstream with respect to said nozzle, and pressure-fluid supply means for said manifolding means, said last-defined means including a pressure-fluid supply connection that is fixedly mounted to said nozzle.

4,308,997

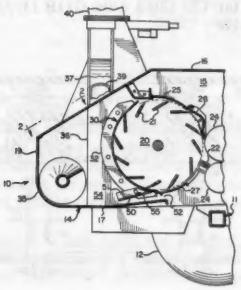
RECUTTER SCREEN BAFFLE

Thomas D. Valco, Weslaco, Tex., assignor to International Harvester Company, Chicago, Ill.

Continuation of Ser. No. 58,701, Jul. 18, 1979, abandoned. This application Sep. 15, 1980, Ser. No. 187,104

Int. Cl.³ B02C *18/22*

U.S. Cl. 241—47 **5 Claims**



1. A forage harvester having a mobile main frame, an enclosed cutterhead housing mounted on said frame and having a crop inlet opening and a crop discharge, a rotary reel type cutterhead mounted in the housing and having a plurality of knives with edges generating a cylindrical periphery upon the rotation of the cutterhead, a shear bar mounted closely adjacent the cutterhead periphery on the crop inlet side, an apertured recutter screen mounted closely adjacent said cutterhead periphery on the crop discharge side, substantially all of the crop exiting through the screen to the crop discharge, an air inlet in said housing below said shear bar, means for generating an air flow in said housing from said air inlet beneath the cutterhead to the discharge opening, and a transverse air baffle disposed vertically beneath a substantial portion of the apertured area of the recutter screen and above the floor of the housing and disposed to direct said air flow along the floor of said housing to the discharge opening.

4,308,998

MILLING, MIXING OR DISPERSING APPARATUS

Richard J. Wood, Warrington, England, assignor to Eiger Engineering Limited, Hertfordshire, England

Filed Feb. 15, 1980, Ser. No. 122,051

Claims priority, application United Kingdom, Feb. 21, 1979, 06131/79

Int. Cl.³ B02C *17/10, 23/02*

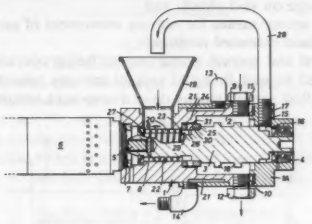
U.S. Cl. 241—101 B **13 Claims**

1. Milling apparatus comprising:

a milling chamber having walls for containing a charge of particulate material and agitating means for submitting the particulate material and the material to be milled to agitating and shearing forces;

at least one predispersing chamber means for receiving and transporting material to be milled and

a feed pump disposed between said chambers at the entrance of the milling chamber, such feed pump including means for carrying out further predispersing work on the material to be milled thereby substantially predispersing the material to be milled before the milling operation while



simultaneously feeding the predispersed material into said milling chamber.

4,308,999

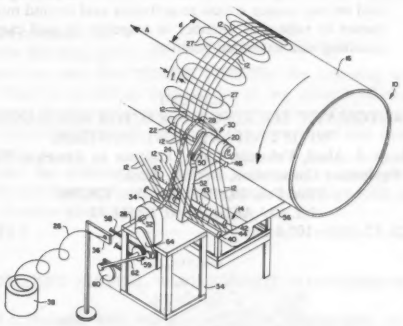
METHOD AND APPARATUS FOR LONGITUDINALLY REINFORCING CONTINUOUSLY GENERATED PLASTIC PIPE

J. Warne Carter, Wichita Falls, Tex., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 30, 1979, Ser. No. 71,053

Int. Cl.³ B21F *17/00;* **B31C** *1/00*

U.S. Cl. 242—7.02 **8 Claims**



1. A method of longitudinally reinforcing continuously generated plastic pipe comprising winding a plurality of fiber elements circumferentially onto the pipe being generated, and depositing continuous fiber elements longitudinally onto the surface of the pipe in the nip formed between the surface of the pipe and the fiber elements being circumferentially wound onto the pipe.

4,309,000

DOFFER MECHANISMS

Kurt Schefer, and Peter Flueckiger, both of Winterthur, Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed Aug. 23, 1979, Ser. No. 68,747

Int. Cl.³ B65H *54/20, 67/04*

U.S. Cl. 242—18 A **7 Claims**

1. A winding machine comprising

at least one chuck;

a doffing carriage for doffing at least one filament package from said chuck;

first moving means for moving said carriage between a retracted position beneath said chuck and an extended position spaced from said chuck;

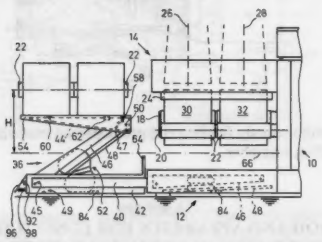
a package-receiving member on said doffing carriage;

second moving means for raising and lowering said package-receiving member;

first sensor means for sensing contact of said member with a package on said chuck; and

second sensor means for sensing movement of said carriage into said extended position;

said first and second sensor means being operatively connected to said first and second moving means whereby said first sensor means de-activates said second moving means to cease raising said member in response to said member contacting a package with said carriage in said retracted position and then activates said first moving means to move said carriage towards said extended position and with said receiving member maintained by said second moving means in contact with said package, and said second sensor means re-activates said second moving means to raise said member in response to said carriage reaching said extended position.



4,309,001

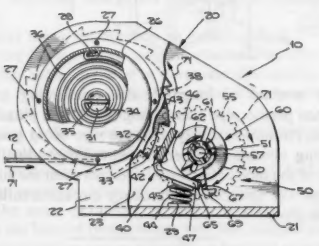
AUTOMATIC LOCKING RETRACTOR MECHANISM WITH UNITARY PAWL CONTROL

Munir J. Ahad, Valencia, Calif., assignor to American Safety Equipment Corporation, Detroit, Mich.

Filed Feb. 29, 1980, Ser. No. 125,789

Int. Cl.³ A62B *35/00;* B65H *75/48*

U.S. Cl. 242—107.4 D **7 Claims**



1. In a locking seat belt retractor having a frame, a spool carried by said frame and rotatably journalled thereto, a seat belt fixedly attached to said spool and windably retracted thereby, a biasing spring for rotatably biasing said spool to retract said belt, at least one multi-toothed ratchet disc rotatable with said spool, a pawl having a ratchet engaging portion for engaging said multi-toothed ratchet disc to lock said spool, said pawl being mounted for movement between ratchet engaged and ratchet disengaged positions, and means for moving said pawl to said ratchet engaged position, the improvement comprising the provision of:

unitary pawl control means for interaction with said pawl for inhibiting pawl motion towards said ratchet engaged position in response initially to a pre-determined minimum amount of protractive rotation of said spool to place said belt in a position of use and, only after said minimum amount of protraction has been exceeded, to the direction of rotation of said spool as the unwound belt is placed in use.

4,309,002

MECHANISM FOR PREVENTING LOOSENING OF MAGNETIC RECORDING TAPE OF TAPE CASSETTE

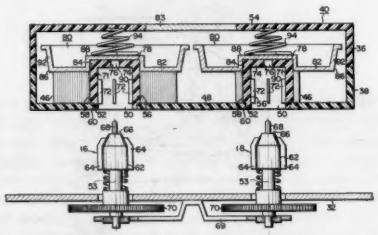
Sinichi Saitou; Toshikazu Kato; Seizo Watanabe, all of Hachioji; Toyoo Nishiyama, Musashimurayama; Misao Shimoda, Hamura; Tutomu Shibata, Hachioji; Kenji Kimura, Tachikawa, and Ken Satoh, Akikawa, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 4, 1980, Ser. No. 137,466

Claims priority, application Japan, Apr. 10, 1979, 54/47065[U]

Int. Cl.³ G03B *1/04;* G11B *15/32*

U.S. Cl. 242—198 **9 Claims**



1. A mechanism for preventing loosening of a magnetic recording tape in a tape cassette, comprising:

a reel shaft having an axis, the reel shaft being rotatably mounted to a magnetic recording tape running apparatus equipped with means for rotating the reel shaft;

a tape cassette housing having a wall which has an opening, the reel shaft extending through said opening when the tape cassette housing is mounted to the magnetic recording tape running apparatus;

a magnetic recording tape loaded in the tape cassette housing;

a reel hub rotatably mounted within the tape cassette housing and including means for engaging the reel shaft of the recording tape running apparatus, the reel hub serving to wind the magnetic recording tape, the reel hub being movable between a first position where one side edge of the magnetic recording tape wound around the reel hub is spaced from said wall of the tape cassette housing and a second position where the one side edge of the wound magnetic recording tape abuts against said wall of the tape cassette housing, and the reel hub being rotatable wherein said first position by the reel shaft inserted through said opening of said wall of the tape cassette housing and engaged with the reel hub;

an abutment member mounted within the tape cassette housing, and being movable between a third position where the abutment member is spaced from the other side edge of the magnetic recording tape wound around the reel hub located in the first position and a fourth position were the abutment member abuts against the other side of the magnetic recording tape wound around the reel hub located in the second position by the reel shaft inserted through said opening of said wall of the tape cassette housing; and

urging means mounted within the tape cassette housing for urging the abutment member toward its fourth position.

4,309,003

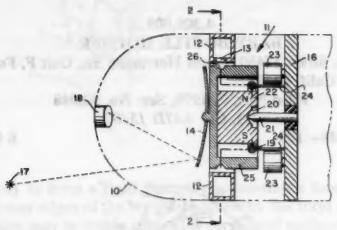
TARGET SEEKING GYRO

William B. McLean, San Diego, Calif., assignor to Walter G. Finch, Baltimore, Md.

Division of Ser. No. 697,189, Jun. 17, 1976, Pat. No. 4,191,346, which is a continuation of Ser. No. 583,337, May 7, 1956, Pat. No. 4,093,154, which is a continuation of Ser. No. 337,899, Feb. 19, 1953, abandoned. This application Feb. 1, 1980, Ser. No. 117,699

Int. Cl.³ F42B *13/30;* **F41G** *7/22*

U.S. Cl. 244—3.16 **18 Claims**



1. In combination, a vehicle, a spinning gyroscope mounted in said vehicle and having a spinning frequency,

means for generating a signal having a frequency proportional to the spin frequency of said gyroscope;

means on said vehicle for applying a torque to said vehicle; and

means responsive to said signal and coupled to said torque applying means for causing said vehicle to move so as to reorient said vehicle in a predetermined direction.

4,309,004

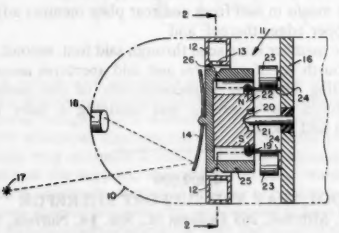
TARGET SEEKING GYRO

William B. McLean, San Diego, Calif., assignor to Walter G. Finch, Baltimore, Md.

Division of Ser. No. 697,189, Jun. 17, 1976, Pat. No. 4,191,346, which is a continuation of Ser. No. 583,337, May 7, 1956, Pat. No. 4,093,154, which is a continuation of Ser. No. 337,899, Feb. 19, 1953, abandoned. This application Feb. 1, 1980, Ser. No. 117,743

Int. Cl.³ F41G *7/22;* **F42B** *13/30*

U.S. Cl. 244—3.16 **5 Claims**



1. A precessionally aligned automatic scanning system, comprising a free spinning means for scanning an electromagnetic field of radiation having lines of force whose angle of incidence is to be determined with respect to the axis of rotation of said free spinning means by detecting said angle of incidence between said axis of rotation of said free spinning means and said direction of said lines of force from said electromagnetic field of radiation to provide an unresolved error signal representative thereof, and

means for receiving said unresolved error signal and utilizing it to precess said free spinning means through gyroscopic forces to cause said axis of rotation of said free spinning means to align itself with lines of force of said electromagnetic field of radiation.

4,309,005

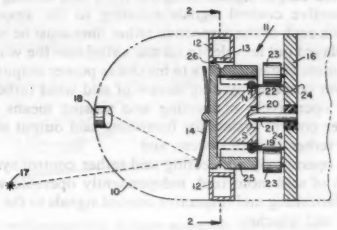
TARGET SEEKING GYRO

William B. McLean, San Diego, Calif., assignor to Walter G. Finch, Baltimore, Md.

Division of Ser. No. 697,189, Jun. 17, 1976, Pat. No. 4,191,346, which is a continuation of Ser. No. 583,337, May 7, 1976, Pat. No. 4,093,154, which is a continuation of Ser. No. 337,899, Feb. 19, 1953, abandoned. This application Feb. 1, 1980, Ser. No. 117,742

Int. Cl.³ F42B *13/30;* **F41G** *7/22*

U.S. Cl. 244—3.16 **11 Claims**



1. In combination,

a free spinning gyroscope;

means on said free spinning gyroscope for scanning and detecting an energy field and for giving unresolved electrical signals representative of misalignment of the axis of said gyroscope with respect to the direction of said field; and

means for utilizing said signals to provide a precessing torque to cause the axis of said gyroscope to align with the direction of said field.

4,309,006

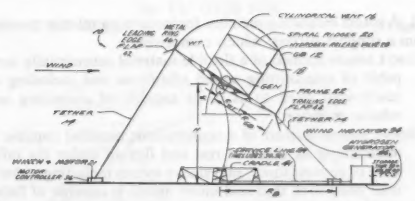
TETHERED AIRFOIL WIND ENERGY CONVERSION SYSTEM

Lloyd I. Biscomb, 4452 Burlington Pl., NW., Washington, D.C. 20016

Filed Jun. 4, 1979, Ser. No. 44,934

Int. Cl.³ B64B *1/02, 1/50;* **F03D** *9/00*

U.S. Cl. 244—33 **33 Claims**



1. A tethered airfoil wind energy conversion system, comprising:

a positive-lift, lighter-than-air, flexible gas bag-type airfoil provided with a lined vent which extends completely generally axially therethrough;

a wind turbine having a power output-providing device;

frame means supported by said airfoil and mounting said wind turbine for rotation relative to said airfoil in axial alignment with said vent;

a plurality of motorized, individually operable winches, being at least three in number, and being for disposition at spaced sites generally in an imaginary ring on the ground;

each such winch having a tether line wound thereon and having a respective outer end;

means connecting each tether line outer end to said airfoil radially distally of said vent, so that said airfoil is tethered to said winches from a plurality of widely distributed sites;

a means for supplying inflating lighter-than-air gas to the airfoil, this means including a gas inlet control valve;

a means for releasing inflating lighter-than-air gas from within the airfoil, this means including a gas release control valve;

means for sensing wind direction incident upon said airfoil and for providing an output signal in relation thereto;

a tether control system incorporating means for determining for each of a plurality of various different wind direction-related output signals received from said sensing means, respective control signals equating to the amounts by which each of the respective tether lines must be reeled in or played out in order to tilt the airfoil into the wind at an optimum angle of attack to maximize power output of said power output-providing device of said wind turbine;

means operatively connecting said sensing means to said tether control system for furnishing said output signal to said tether control system; and

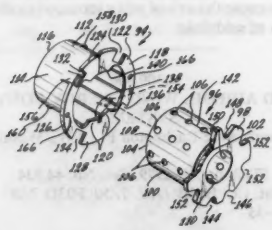
means operatively connecting said tether control system to each of said motorized, independently operable winches for furnishing said respective control signals to the respective said winches.

4,309,007

SOUND INSULATING SUPPORT FOR PLUMBING PIPES

Daniel D. Logsdon, Fullerton, Calif., assignor to The Logsdon Foundation, Stanton, Calif.

Filed May 27, 1980, Ser. No. 153,033
Int. Cl.³ F16L *5/00*
U.S. Cl. 248—56 **14 Claims**



1. A sound insulating member for isolating a tubular member from a support surface which comprises:

insert means formed of a flexible material substantially incapable of transmitting sound vibrations and including an insert wall sized so as to be capable of encircling said tubular member;

sleeve means formed of a semiresilient material capable of maintaining its shape at rest and flexing under the influence of applied force, said sleeve means including a sleeve wall sized such that said insert means is capable of fitting within it;

each of said sleeve means and said insert means including a slit dividing said walls of both said sleeve means and said insert means such that the portions of said walls located on the respective sides of said slits are capable of being moved with respect to each other allowing both said sleeve means and said insert means to be opened and closed about said slits;

retaining means capable of retaining said insert means in a fixed position within said sleeve means and maintaining said slit in said insert means substantially aligned with said slit in said sleeve means such that both said insert means and said sleeve means are capable of being opened at their respective slits to allow said tubular member to pass through said slits locating said tubular member within both said insert means and said sleeve means and of being closed to cradle said tubular member within said insert means and fixedly hold said insert means within said sleeve means;

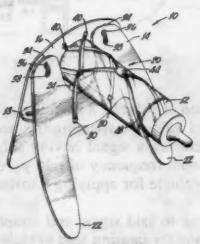
said sleeve means including support attaching means capable of attaching to said support surface to fixedly hold said sleeve means to said support surface.

4,309,008

BABY BOTTLE HOLDER

Walter M. Sirks, 17450 Mount Herrmann St., Unit F, Fountain Valley, Calif. 92708

Filed Nov. 7, 1979, Ser. No. 92,048
Int. Cl.³ A47D *15/00*
U.S. Cl. 248—105 **6 Claims**



1. A baby feeder comprising:

a front plate member having a pocket formed in its upper end configured for receiving a baby bottle;

a rear plate member;

an interconnecting member configured for being received between said front and rear plate members generally adjacent the midpoint thereof for forming an easel;

first and second sets of apertures in said leaf member adjacent the front and rear edges respectively;

a third set of apertures in said front plate member for general alignment with said first set of apertures;

a fourth set of apertures in said rear plate member in general alignment with said second set of apertures;

aperture means in said front and rear plate member adjacent the upper edges thereof; and

an elastic member interlaced through said first, second, third and fourth set of apertures and said apertures means for providing hingeable interconnection of the parts and configured for receiving and retaining a baby bottle within said pocket.

4,309,009

TOOL TRAY AND SUPPORT THEREFOR

Richard H. Mitchell, 269 Dedham St., Rte. 1A, Norfolk, Mass. 02056

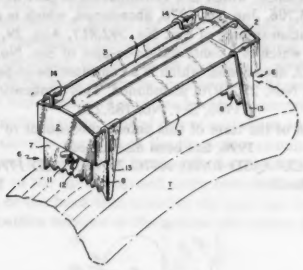
Filed Jan. 31, 1980, Ser. No. 117,307
Int. Cl.³ A47G *23/02*
U.S. Cl. 248—149 **9 Claims**

1. A device for attachment to a tray with a bottom and side walls comprising:

a leg having two laterally adjustable overlapping leg sheets, the upper end of each sheet having an edge for engaging and supporting the bottom of the tray, and the lower edges of the leg sheets extending substantially transversely of the tray;

extensions from each leg sheet including means engaging the tray side walls; and

means for laterally adjustably fastening the sheets together so that the sheets are mutually supporting and so as to clamp the leg pieces to the bottom and sides of the tray, the two leg sheets cooperating with each other and the



tray to form a rigid assembly presenting a footing at the lower edges of the leg sheets whereby flat trays of varying sizes may be stably supported on curved surfaces of different widths and curvatures.

4,309,010

TRIPOD WITH ADJUSTABLE SUPPORT SURFACE FOR SUPPORTING VARIOUS OBJECTS

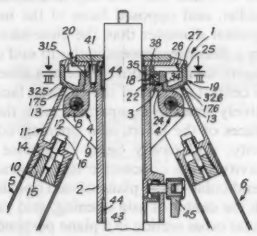
Patrick Posso, Lausanne, Switzerland, assignor to Gefitec S.A., Lausanne, Switzerland

Filed Oct. 16, 1979, Ser. No. 85,270

Claims priority, application Switzerland, Oct. 24, 1978, 10976/78

Int. Cl.³ F16M *11/38*

U.S. Cl. 248—168 **6 Claims**



1. A tripod with adjustable support surface for supporting various objects, particularly photographic or cinematographic apparatus, comprising a central support provided with pivot pins for telescopic legs adapted to pivot in radial planes and a selection ring mounted to rotate about the substantially vertical axis of the support, immobilized in axial translation and limited in amplitude of rotation in order to be able to occupy at least two angular positions, this ring bearing at least two sets of three stop members cooperating with end stops of the legs and these sets being offset angularly in register with the positions of the ring, in order respectively to define at least two different inclinations of these legs so that by rotating said ring, one set of stop members is selected to determine one of the inclinations of said legs,

wherein each leg extends beyond its pivot axis, upwardly, in order to constitute, by its end merged with a cross section, the corresponding stop, and

the lower surface of the selection ring presents, in relation with this stop for forming the combined stop members, at least two inclined ramps extending parallel and at the same distance from the pivot axis of the adjacent leg, but converging towards the geometrical axis of the support along different angles, these ramps being offset angularly along the circumferential periphery of the ring in register with the two positions of this ring.

4,309,011

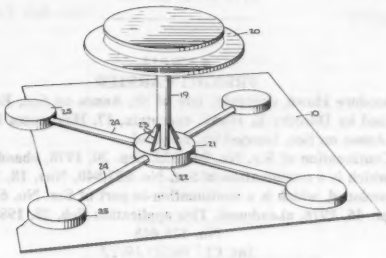
ADHESIVE MOUNTING FOR WALL FIXTURES

Donald Spector, 380 Mountain Rd., Union City, N.J. 07087

Continuation-in-part of Ser. No. 37,047, May 8, 1979, Pat. No. 4,266,369. This application Dec. 27, 1979, Ser. No. 107,625

Int. Cl.³ F16M *13/00*

U.S. Cl. 248—205 A **7 Claims**



1. A wall-mounting fixture assembly comprising:

(a) a base sheet having an underface of pressure-sensitive material of relatively low strength per unit area, said base sheet being manually pressable against a wall surface at a desired site to conform intimately thereto; and

(b) a fixture having a flat foot covered by a layer of pressure-sensitive material of high strength per unit area, whereby when the foot is pressed against the wall-applied base sheet at the central zone therein, it is strongly bonded thereto, the base sheet interposed between said foot and said wall acting as a load distributor for said fixture whereby the fixture is capable of supporting relatively heavy loads, said base sheet being readily peelable from said wall surface when removal of said assembly is desired.

4,309,012

INSTRUMENT MOUNTING STRUCTURE

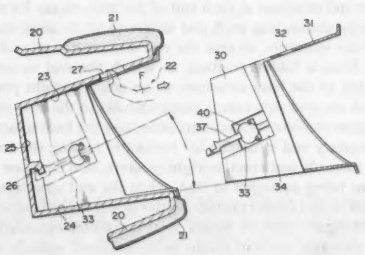
Yukio Fukunaga, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Sep. 12, 1979, Ser. No. 75,180

Claims priority, application Japan, Sep. 21, 1978, 53-129820[U]

Int. Cl.³ G12B *9/00*

U.S. Cl. 248—27.1 **3 Claims**



1. In a structure for mounting an instrument to a recessed instrument panel within the recess thereof, said structure comprising: at least one hook member provided on the inner surface of said recess; and at least one lock device including a base

plate secured on said instrument, a lock member supported on said base plate for sliding movement at an angle with respect to the direction of insertion of said instrument into and out of engagement with said hook member, a snap-action mechanism secured on said base plate and coupled to said hook member, and said mechanism having its position changed so as to hold said lock member in engagement with said hook member under a force when said instrument is advanced into said recess to a predetermined position and returned to its original position so as to bring said lock member out of engagement with said hook member when said instrument is retracted against the force from the predetermined position.

4,309,013

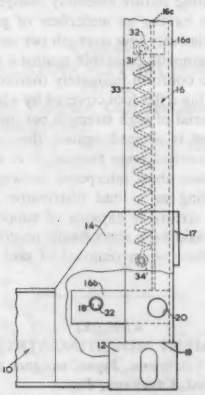
FREIGHT CARRIER

Theodore Howe, deceased, late of St. Annes on Sea, England, and by Dorothy E. Howe, executrix, 17, Heyhouses La., St. Annes on Sea, Lancashire, England

Continuation of Ser. No. 944,023, Sep. 20, 1978, abandoned, which is a continuation of Ser. No. 852,840, Nov. 18, 1977, abandoned, which is a continuation-in-part of Ser. No. 677,837, Apr. 16, 1976, abandoned. This application Feb. 28, 1980, Ser. No. 125,445

Int. Cl.³ B65D *19/12*

U.S. Cl. 248—346 **12 Claims**



1. A freight carrier comprising: a substantially flat rectangular base structure; the two post members associated with each end of the base structure having means for interconnecting the two post members together to form a unitary, substantially plane end structure at each end of the base; means for pivotally directly connecting each end structure to its associate end of the base structure, so that the end structure is pivotally movable from a folded position, in which the end structure lies parallel to the base structure, to an erect, upright position in which the end structure is perpendicular to the base structure; elongate resilient means interconnecting the base structure and the unitary end structure for resiliently biasing the end structure towards said erect, upright position, said elongate resilient means being arranged so that, when the end structure is positioned in said folded position with respect to the base structure, the elongate resilient means is of maximum extended length, said elongate resilient means being confined entirely within a plane defined by one of said associated end structure or the base structure when the end structure is positioned in said folded position, with respect to the base structure, and when the end structure is positioned in said erect, upright position, with respect to the base structure.

4,309,014

SOAP BAR AND RELEASABLE HOLDER

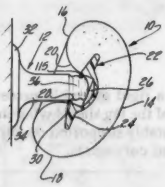
Henry Blaszkowski, P.O. Box 114, Southfield, Mich. 48034

Continuation-in-part of Ser. No. 45,293, Jun. 4, 1979, abandoned, which is a continuation of Ser. No. 884,768, Mar. 9, 1978, abandoned, which is a continuation-in-part of Ser. No. 585,706, Jun. 10, 1976, abandoned, which is a continuation-in-part of Ser. No. 392,817, Aug. 29, 1973, abandoned, which is a continuation-in-part of Ser. No. 274,641, Jul. 24, 1972, abandoned, which is a continuation-in-part of Ser. No. 93,000, Nov. 27, 1970, abandoned. This application Sep. 8, 1980, Ser. No. 185,220

The portion of the term of this patent subsequent to Dec. 11, 1996, has been disclaimed.

Int. Cl.³ A45D *40/00;* **A47G** *29/08;* **C11D** *17/04*

U.S. Cl. 248—359 **27 Claims**



1. In combination a soap bar having a pair of opposed faces and having a socket therein extending inwardly from one of said opposed faces toward the other, an insert formed of a water-insoluable material embedded in said socket, said insert being in the shape of a generally circular disc having a pair of opposed faces of substantially the same diameter, one of said faces of the insert being completely embedded in and surrounded by the soap and the other being partially embedded in and surrounded by the soap bar and having at least the central portion thereof recessed into and exposed through the open end of said socket, said opposed faces of the insert having a substantially greater diameter than the dimension of the insert between and in a direction perpendicular to said opposed faces thereof, said insert having a cavity therein, a generally circular opening at the central portion of the exposed face of the insert which is relatively small in comparison with the diameter of the opposed faces of the insert, said opening communicating with said cavity, said cavity being otherwise substantially closed, said cavity being concentric to a central axis thereof which is perpendicular to the plane of said opening and which passes through the center of said opening, said cavity being of generally circular cross section in a plane perpendicular to said central axis, said opening being defined by a circumferential lip on said insert which extends radially inwardly of the cavity at the outer end thereof, the portion of the cavity directly behind said lip having a diameter larger than the diameter of said opening and a holder for said soap bar having a shank provided with a base at one end, said base having a mounting face for mounting the holder on a support surface, said shank having a central axis perpendicular to said mounting face so as to extend perpendicular to the support surface on which the holder is mounted, the opposite end of said shank terminating in a head concentric with the central axis of the shank, the outermost peripheral portions of said head in a plane perpendicular to the central axis of the shank lying on a circle which is concentric to said central axis of said shank and having a diameter smaller than the lateral dimension of said base in a plane perpendicular to said central axis, said head having a free end portion and a second portion axially adjacent the free end portion on the side thereof adjacent the shank, said second portion of the head having a smaller diameter than the largest diameter of the free end portion in a plane perpendicular to the central axis of the shank, said free end portion of the head being insertable through said opening in the insert for interengaging said lip with said second portion of said head to thereby retain the soap bar on the holder, the axial dimension of said cavity between

said lip and the inner end of the cavity being substantially greater than the axial dimension between said second portion of the head and the axially outermost portion of said head, the maximum diameter of the free end portion of said head being smaller than the diameter of the portion of the cavity directly behind said lip, there being sufficient clearance between the head and cavity to permit the insert to assume a tilted position wherein the central axis of the cavity is inclined to the central axis of the shank when said lip is engaged with said second portion of the head, whereby the insert may be telescoped over the free end portion of said head with the central axis of said cavity inclined to the central axis of said shank so as to interengage a circular segment of the lip with a circular segment of the second portion of the head while the diametrically opposite segment of the lip is disposed more remote from the free end portion of the head thus enabling the soap bar to assume said tilted position relative to the central axis of the shank.

4,309,015

VERTICAL POSITION ADJUSTER FOR SEATS, PARTICULARLY FOR MOTOR VEHICLE SEATS

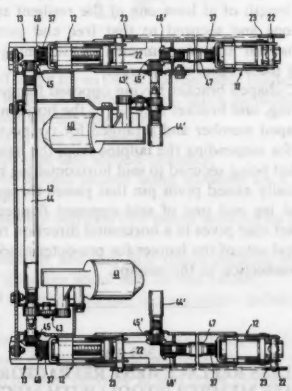
Dieter Mühr, Remscheid, Fed. Rep. of Germany, assignor to Keiper Automobiltechnik GmbH & Co. KG, Remscheid, Fed. Rep. of Germany

Filed Oct. 22, 1979, Ser. No. 87,295

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1978, 2846632

Int. Cl.³ B60N *1/06*

U.S. Cl. 248—396 **7 Claims**



1. A vertical position adjuster for seats, particularly motor vehicle seats, comprising a base frame; a rectangular seat frame; two pairs of swing supports hinged between said base frame and said seat frame; four interchangeable adjusting gear units arranged in corner areas between said base frame and said seat frame; each gear unit having an input transmission means supported on said base frame and an output gear mechanism coupled between the assigned swing support and said input transmission means; and means for driving in pairs the input transmission means of gear units arranged at one side of the sear and of gear units arranged at the opposite side of the seat, said pairs of transmission means being driven independently one of the other.

4,309,016

WALL HANGER

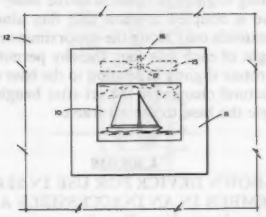
Robert K. Tendler, Buckridge Dr., Amherst, N.H. 03031

Division of Ser. No. 831,092, Sep. 6, 1977, which is a continuation of Ser. No. 639,594, Dec. 10, 1975, abandoned, which is a continuation-in-part of Ser. No. 446,394, Feb. 27, 1974, Pat. No. 3,926,399, which is a continuation-in-part of Ser. No. 400,622, Sep. 25, 1973, Pat. No. 3,868,088, which is a continuation-in-part of Ser. No. 235,174, Mar. 16, 1972, Pat. No. 3,788,588. This application Jun. 30, 1978, Ser. No. 921,041

The portion of the term of this patent subsequent to Feb. 25, 1992, has been disclaimed.

Int. Cl.³ A47F *7/14*

U.S. Cl. 248—467 **6 Claims**



1. A method of hanging a structure on a wall, in which the wall is provided with a member projecting therefrom, comprising the step of:

affixing to the back of the structure to be hung a unitary article of resinous material including two flat separated pad portions and an integral, flexible member depending between and attached to said pad portions, said structure with said unitary article affixed being adapted to be hung on the wall such that the flexible member passes over the projecting member.

4,309,017

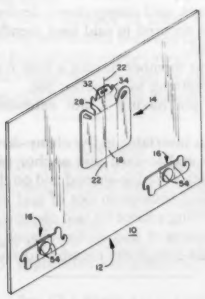
REVERSABLE TWO-POSITION FRAME HANGER

John W. Slemmons, 19142 Glen Albyn La., Orange, Calif. 92669

Filed Sep. 4, 1979, Ser. No. 72,480

Int. Cl.³ A47G *1/24*

U.S. Cl. 248—495 **3 Claims**



1. An at least one member, reversible, two position support and spacing means capable of coupling to and holding an art frame in a first, flat configuration substantially against a wall, and in a second, stand off position a selected distance away from the wall is presented, comprising:

a first, generally axially symmetric, support and spacing member comprising a planar base capable of being coupled to the frame, the base having coupled thereof on each the left and right side along fold lines generally parallel to

the axis generally rectangular, planar side flaps about the width that the frame is to stand off from the wall in the stand off position, each side flap including a top surface above the top of the base defining a slot which slot when the side flap is perpendicular to the base is generally aligned along the plane passing near the center of gravity of the art frame;

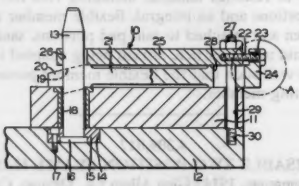
the top surface of the base is coupled along a fold line perpendicular to the axis to a planar top member having a locking tab on each side flap when the side flaps are folded perpendicular to the base, the plane of the top member passing near the center of gravity of the frame when the tabs are mated to the slots, the surface of the planar top member defining a receptacle capable of mating with hanging means coupled to a wall, the side flaps are capable of rotating slightly in relation to the base; the surface of the base is coupled to each side flap along a fold line which extends only along the approximate middle third of the height of each side flap, thereby permitting each side flap to rotate slightly in relation to the base to compensate for structural changes in the art after hanging; and means to couple the base to the art frame.

4,309,018

CLAMP-DOWN DEVICE FOR USE IN SECURING A MEMBER IN AN INACCESSIBLE AREA

John R. Reiss, North Versailles, Pa., assignor to American Standard Inc., Wilmerding, Pa.

Filed Feb. 22, 1980, Ser. No. 123,635
Int. Cl.³ A47B 97/00
U.S. Cl. 248—503 **7 Claims**



1. A clamp-down device for removably securing an equipment member to a fixed base member having an accessible end and an inaccessible opposite end inaccessible to use of conventional securing means, said clamp-down device comprising:

(a) an anchor pin secured in said base member adjacent the inaccessible end,

(b) said equipment member having a hole formed therein at one end for receiving said anchor pin,

(c) said anchor pin having a slot extending transversely therethrough;

(d) a clamping bar insertable in the clamp-down device from said accessible end toward said anchor pin, to a locking position in which a wedge-shaped end on the clamping bar is wedged in said transverse slot of said anchor pin; and

(e) means for exerting a force on said clamping bar for effecting wedging action of said wedge-shaped end in said slot for securing said equipment member to said base member.

4,309,019

ADJUSTABLE TAILPIPE HANGER

Stephen R. Bloom, 12445 Levan Rd., Livonia, Mich. 48150

Filed Nov. 3, 1980, Ser. No. 203,088
Int. Cl.³ F16M 13/00
U.S. Cl. 248—610 **3 Claims**

1. An adjustable tailpipe hanger for securing a tailpipe upon a support means formed on a vehicle, comprising:

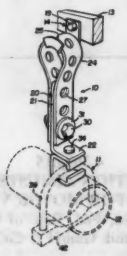
a narrow-thin, sheet-like, rigid strip formed as an L-shaped member having a vertical leg and a horizontal leg;

an elongated, narrow rubber-like strip normally double bent into an inverted U-shape to form a loop-like bight and a pair of depending, resilient straps;

said vertical leg being normally arranged between, secured to, and having its opposite faces overlapped by the free end portions of said resilient straps, with said bight being located at a distance considerably above the L-shaped member for looping over the vehicle support means and thereby, supporting the hanger therefrom;

a series of uniformly spaced apart openings formed along the lengths of the resilient straps and the L-shaped member vertical leg, whereby openings on the vertical leg and the overlapping portions of the resilient straps may be selectively aligned;

releasable, bolt-like mechanical fastening means normally extending through aligned openings in the vertical leg and straps for securing the straps to the vertical leg at preselected locations for varying the amount of relative verti-



cal overlap of the straps relative to the vertical leg, and thereby, varying the over-all length of the hanger, and said vertical leg being considerably longer than the horizontal leg and normally being overlapped by a considerable length of at least one of the resilient strap free end portions and secured to that free end portion by said mechanical fastening means for stiffening the hanger along the vertical axis thereof;

and a C-shaped bracket having opposed flanges forming an opening, said bracket secured to the horizontal leg of the L-shaped member and arranged for connection to a tailpipe for suspending the tailpipe from the hanger, and said bracket being secured to said horizontal leg by means of a vertically axised pivot pin that passes through said horizontal leg and one of said opposed flanges so that the bracket may pivot in a horizontal direction relative to the vertical axis of the hanger for pre-determined adjustment for connection to the tailpipe.

4,309,020

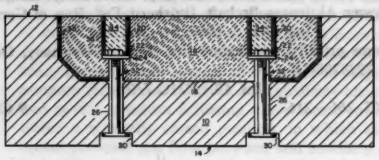
PATCHLESS REPLACEMENT REFRACTORY INSERT FOR BASE MEMBER (STOOL) WITH MECHANICAL ANCHORING

Paul G. Adams, Birmingham, Ala., and John T. Cruell, Frankfort, Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Jul. 31, 1980, Ser. No. 174,096
Int. Cl.³ B22D 7/12
U.S. Cl. 249—204 **2 Claims**

1. An ingot stool of the type upon which steel is poured comprising a rectangular slab of cast iron having a top, bottom and sides with the top having a center portion cut out, a precast ceramic stool insert fitted in snug relationship with the center cut out portion of the stool, at least two vertical stepped recesses formed within the ceramic stool insert, each recess having a nut received therein, and supported by the stepped portion of

said recess, at least two bolts passing through the bottom of the stool and threaded into the nuts located within the vertical



recesses and ceramic plugs filling the vertical recesses above the nuts.

4,309,021

VALVE STRUCTURE

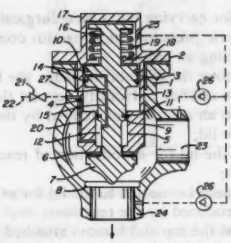
Carl H. Hafele, Bergstrasse 83, 4050 Monchengladbach, Fed. Rep. of Germany

Filed Mar. 16, 1979, Ser. No. 21,060

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1978, 2811879

Int. Cl.³ F16K *31/122*

U.S. Cl. 251—26 **3 Claims**



1. An on/off valve for use with compressible fluids, actuated by the fluid which it controls, said valve including axially aligned first and second chambers;

a first piston in said first chamber;

a second piston in said second chamber;

said first and second pistons being mounted on a common valve spool;

said first chamber and said first piston defining an operating chamber;

said first chamber and said first piston defining an annular damping chamber about said second piston;

said second chamber and said second piston defining a relief chamber;

operating means for said valve comprising a valved fluid passageway extending from said relief chamber to permit reduction of fluid pressure in said relief chamber;

a first fluid passageway in said valve spool directly connecting said damping chamber and said relief chamber to permit the pressure in said damping chamber to be slowly reduced in response to a reduction in pressure in said relief chamber;

at least two axially-spaced piston rings between said first piston and said first cylinder, and including a second fluid passageway through said valve spool connecting the space between said piston rings to said relief chamber whereby fluid from the operating chamber may leak into the relief chamber, and resilient means acting on the first piston to maintain the valve in a normally open position and means for introducing the highest fluid pressure into the operating chamber from the valve inlet or outlet.

4,309,022

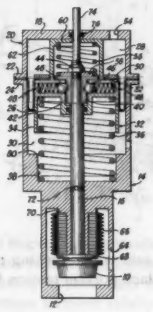
POPPET VALVE ACTUATOR APPARATUS

Robert H. Reinicke, Mission Viejo, and Henry A. Waller, Woodland Hills, both of Calif., assignors to Consolidated Controls Corporation, El Segundo, Calif.

Filed Apr. 14, 1980, Ser. No. 139,961

Int. Cl.³ F16K *31/126, 31/122*

U.S. Cl. 251—61.4 **17 Claims**



6. A poppet valve actuator, comprising an actuator housing having a cylindrical control chamber therein, piston means movably mounted within said control chamber, means for admitting pressurized fluid into said control chamber to move said piston means in one direction therewithin, a normally open poppet having a valve stem connected to said piston means and movable into engagement with a valve seat when said piston means is moved in said direction, detent means interconnecting said valve stem and said piston means so that they move together, said detent means acting to disconnect said piston means from said valve stem when said poppet has been seated on said valve seat with a predetermined initial seating force while said piston means continues to move in said one direction due to the force exerted thereon by said pressurized fluid, stop means for limiting movement of said piston means in said one direction after said valve stem has been disconnected therefrom, and spring means operative during periods when said piston means is held against said stop means by said pressurized fluid for holding said poppet against said valve seat with a predetermined holding force which is substantially less than said initial seating force.

7. The poppet valve actuator of claim 6, which includes a main actuator spring positioned between said piston means and said housing and biasing said poppet away from said valve seat with a force which must be overcome by said pressurized fluid in order to move said piston means in said direction.

4,309,023

SUSPENSION APPARATUS FOR A SCAFFOLD

Gerard Plumettaz, Bex, and Joe Küpfer, Opfikon, both of Switzerland, assignors to Plumettaz S.A., Vaud and Gebr. Küpfer, Zurich, both of, Switzerland

Filed Sep. 17, 1979, Ser. No. 76,315

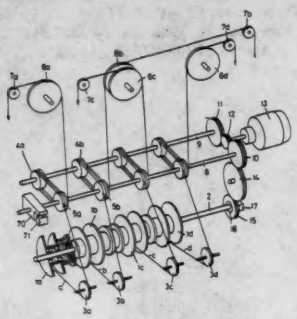
Claims priority, application European Pat. Off., Sep. 25, 1978, 78200205

Int. Cl.³ B66D *1/52, 1/58*

U.S. Cl. 254—273 **9 Claims**

1. Apparatus for suspending a scaffold or the like, comprising a frame, one or more cables supporting said scaffold, a support to which said cables are connected, a winch made up of one or more pairs of grooved pulleys having parallel axes, a motor having a shaft coupled to said winch for rotating all of said pulleys in the same direction, each of said cables being wound several times over a respective one of said pairs of pulleys and having on one side a taut portion running to said scaffold or to said support and on the other side a slack portion,

means for keeping said slack portion under tension, means for monitoring the tension of said slack portion, and winch-locking means connected to said monitoring means, said monitoring means causing said winch locking means to forcibly lock said winch if said slack portion tension falls below a predetermined threshold.



4,309,024

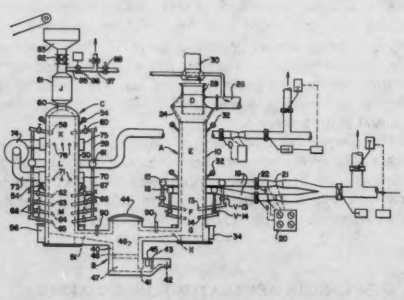
CUPOLA WITH AUXILIARY GAS GENERATOR

Norman P. Lillybeck, Moline, Ill., and David E. Dell'Agnese, Milwaukee, Wis., assignors to Modern Equipment Company, Port Washington, Wis.

Continuation-in-part of Ser. No. 816,382, Jul. 18, 1977, abandoned. This application Feb. 8, 1979, Ser. No. 10,371

Int. Cl.³ F27B *1/20*

U.S. Cl. 266—138 5 Claims



1. In combination; a cupola having means adjacent the upper end for infeeding of pieces of metal, coke, and flux, a plurality of tuyeres spaced above the bottom, and a molten metal and slag discharge passage at the bottom; a closed forehearth communicating with the outlet of said passage; a gas generator having normally closed means for infeeding at least carbon containing materials at the upper end, a passage at the lower end communicating with said forehearth, and a plurality of vertically spaced rows of tuyeres with the lowermost row being spaced from the lower end; and means for injecting preheated combustion air through the tuyeres of said generator and said cupola, whereby hot gases from said generator including carbon monoxide pass through said forehearth into the lower end of said cupola to provide an additional source of heat for said cupola due to the heat content of said hot gases and the combustion heat of carbon monoxide.

4,309,025

APPARATUS FOR CARRYING OUT METALLURGICAL REACTIONS IN A LADLE

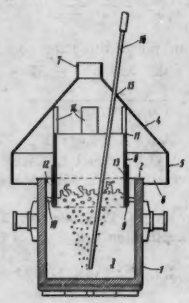
Walter Meichsner, Krefeld, Fed. Rep. of Germany, assignor to Thyssen Aktiengesellschaft, Duisburg, Fed. Rep. of Germany

Filed Oct. 3, 1980, Ser. No. 193,739

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1979, 7928208[U]

Int. Cl.³ C21C *7/02*

U.S. Cl. 266—216 9 Claims



1. Apparatus for carrying out a metallurgical reaction on a melt at atmospheric pressure, the apparatus comprising:

a ladle comprising an edge;

a lid spaced above the edge of the ladle, the lid comprising an edge that extends outwardly beyond the edge of the ladle to form an annular slot defined by the edges of the ladle and the lid;

an opening in the lid for introduction of reaction materials into the melt;

a connection piece connected to the lid for exhausting reaction gases produced by the reaction;

a collar open at the top and bottom attached to the lid, the upper edge of the collar being spaced below the lid and above the edge of the ladle to define a passage for ambient air, the lower edge of the collar being arranged close to the normal level of the melt in the ladle.

4,309,026

GAS SPRING

Hermann Reuschenbach, Rossbach, and Willi Schäfer, Koblenz, both of Fed. Rep. of Germany, assignors to Stabilus GmbH, Koblenz-Neuendorf, Fed. Rep. of Germany

Filed Dec. 11, 1979, Ser. No. 102,422

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1978, 2855560

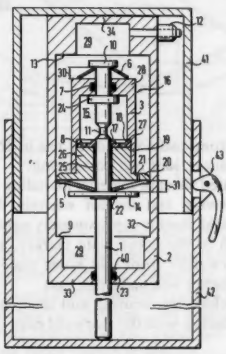
Int. Cl.³ F16F *5/00, 9/06*

U.S. Cl. 267—121 23 Claims

1. In a gas spring including a cylinder member, having a longitudinal axis, an internal cylindrical face and two end walls which together define a cavity within the cylinder member, a piston rod extending axially through an aperture in one of said end walls and being axially movable with respect to said cylinder member between two terminal positions, guiding and sealing means adjacent said aperture for sealingly guiding said piston rod within said aperture; a body of pressurized gas within said cavity, said gas normally biasing said piston rod towards one of said terminal positions, and pressure responsive means carried at least in part by said piston rod for braking the axial movement of said piston rod with respect to said cylinder member when the pressure of said gas within said cavity decreases below a predetermined minimum value, the improvement in said pressure responsive braking means comprising:

(a) an auxiliary cylinder-piston unit carried by said piston rod within said cavity for common movement of said unit

with said piston rod with respect to said cylinder member, said unit including an auxiliary cylinder and an auxiliary piston received therein and defining therewith an auxiliary chamber which is separated from said cavity under normal operational conditions during the path of movement of said piston rod with respect to said cylinder member, one of said auxiliary cylinder and said auxiliary piston being movable with respect to the other in response to a pressure differential between said auxiliary chamber and said cavity, pressure adjusting valve means movable between a normally closed position, in which said valve means prevents gas flow between said auxiliary chamber and said cavity, and an open position, in which said valve means permits gas flow between said auxiliary chamber and said cavity for adjusting the pressure within said auxiliary chamber to the pressure within said cavity, and operating means operable from outside said cylinder mem-



ber for moving said valve means from said closed position to said open position;

(b) a braking device carried by said piston rod within said cavity for movement between a first position, in which said braking device is in mechanical engagement with the inner cylindrical face of said cylinder member, and a second position, in which said device is out of engagement with said inner cylindrical face; and

(c) means operatively coupling the movable one of said auxiliary cylinder and said auxiliary piston to said braking device for bringing said braking device into mechanical engagement with the inner cylindrical face of said cylinder member in response to an unintended drop of the pressure in said cavity resulting in a predetermined pressure differential between said auxiliary chamber and said cavity, independently of the relative position of said piston rod and said cylinder member.

4,309,027

PNEUMATIC SPRING HAVING SELECTIVELY RELEASABLE ROD-RETAINING STRUCTURE

Werner Mölders, Plaidt, and Wolfgang Luhn, Nievern, both of Fed. Rep. of Germany, assignors to Stabilus GmbH, Koblenz-Neuendorf, Fed. Rep. of Germany

Filed Nov. 27, 1979, Ser. No. 97,793

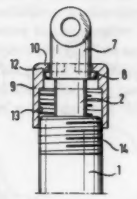
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1978, 2851366

Int. Cl.³ F16F 9/32

U.S. Cl. 267—124 **9 Claims**

1. In a pneumatic spring including a cylinder defining a sealed cavity therein, a piston rod received through an axial end wall of said cylinder for axial movement relative to said cylinder between axially innermost and axially outermost positions, a piston carried by the piston rod within the cavity and dividing the cavity into two compartments, and a body of gas under pressure within said cavity tending to bias the piston rod axially outward of the cavity, the improvememt comprising:

means carried in part by the piston rod externally of said cavity and in part by the cylinder at the end thereof through which the piston rod extends for selectively releasably retaining the piston rod at or adjacent said innermost position of the piston rod, said means comprising a sleeve mounted on said cylinder adjacent and extending beyond said end wall and surrounding



said piston rod, said sleeve being provided with a substantially axially directed abutment face at the inner circumferential face of its section extending beyond said end wall, and further comprising an abutment member axially fixed with respect to said piston rod adjacent the axially outward end thereof, said abutment member being movable into and out of engagement with said abutment face in a plane substantially transverse to the axis of said piston rod.

4,309,028

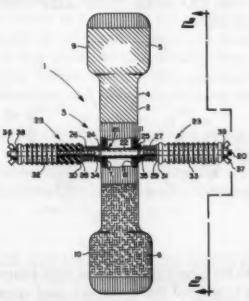
STRIKING DEVICE

Theodore Finizza, 4825 N. Sedgewick, Lyndhurst, Ohio 44124

Filed Oct. 10, 1978, Ser. No. 949,816

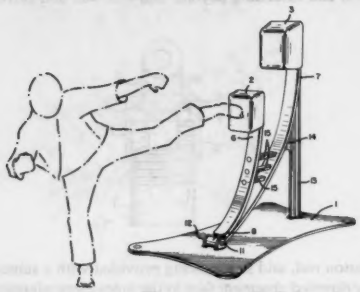
Int. Cl.³ A63B 69/00

U.S. Cl. 272—76 **17 Claims**



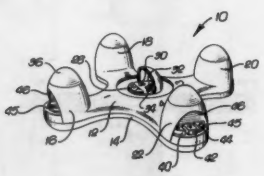
1. A portable manually supportable striking type exercise device comprising balanced elongate target means for receiving blows, support means for supporting said target means for substantially balanced rotation about said support means, said support means including manually graspable means for facilitating manual grasping of said support means and manual holding of the striking device while said target means is struck by a part of the body of a person, and adjusting means for adjusting the rotatability of said target means about said support means, said target means comprising an elongate shaft-like member and respective target ends at opposite ends of said shaft like member, and said adjusting means comprising means for applying to said shaft-like member a force resisting such rotation of said target means.

4,309,029
MARTIAL ARTS STRIKING MACHINE
Steven M. Tomko, R.D. #1, Box 130-C, Auburn, Pa. 17922
Filed Jan. 8, 1979, Ser. No. 1,600
Int. Cl.[3] A63B 69/00
U.S. Cl. 272—76 3 Claims



1. A striking device comprising a base; at least two arc supports of differing heights, resiliently attached in a vertical plane to said base; striking areas supported on the concave side of the arc supports; adjustable spacers between the arc supports to provide variable tension levels to said arc supports; and a back brace supporting the convex side of at least one of the arc supports and at a point on the convex side so as to provide maximum stable resistance.

4,309,030
ELECTRONIC COMPETITIVE PLAYER RESPONSE GAME APPARATUS
Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356, and Stephen C. Beck, Berkeley, Calif., assignors to Adolph E. Goldfarb, Tarzana, Calif.
Filed Feb. 14, 1980, Ser. No. 121,647
Int. Cl.[3] A63B 71/06; A63F 9/00
U.S. Cl. 273—1 GC 30 Claims



1. Apparatus for playing a game of skill adapted for concurrent use by up to at least three players, said apparatus comprising:

a. game start means for causing the commencement of a game round;

b. at least three player control stations, each of said stations adapted for operation by a separate player and comprising:

(1) designating means for designating to the players which one of said stations is "active"; and

(2) actuating means actuatable by the station's respective player for permitting said player to select a particular other one of said stations; and

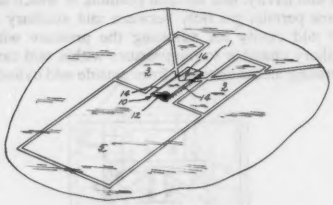
c. electronic game control means for

(1) operating the respective ones of said designating means,

(2) determining whether a particular actuation of a particular station's said actuating means is "proper", and

(3) for responding to the proper actuation of said actuating means at a particular active station by causing the thereby selected station thereupon to become the active station.

4,309,031
STRIKE ZONE PAD
Maurice O'Meara, 516 Lyons Ave., Denison, Iowa 51442
Filed Sep. 17, 1980, Ser. No. 187,984
Int. Cl.[3] A63B 71/02
U.S. Cl. 273—25 7 Claims

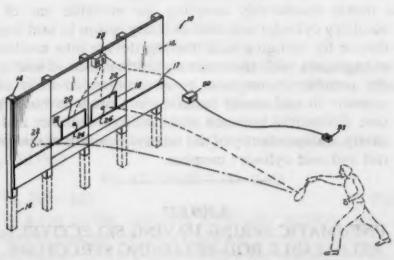


1. A strike zone pad adapted for use in conjunction with a home plate marker, said pad comprising:

a flat elongated sheet of material including a v-shaped recess at the forward end thereof wherein the thickness and width of said sheet is approximately equal to the thickness and width of the home plate marker, and said sheet extends rearwardly from said home p[illegible]te marker between adjacent batter box markings; and

means for releasably securing said sheet in a generally mating relationship with the rearward edge of said home plate marker.

4,309,032
TENNIS TRAINING DEVICE
Walter P. Facius, 124 Second Ave., New York, N.Y. 10003
Filed May 24, 1979, Ser. No. 42,050
Int. Cl.[3] A63B 61/00
U.S. Cl. 273—29 A 3 Claims



1. A tennis training device comprising a rigid vertical backboard, a pair of laterally spaced rigid target areas mounted on said backboard, each of said target areas including means for detecting an impact thereon, said backboard being vertically positioned to cause balls impacting against the backboard or the target areas to rebound back towards the player after each such impact to enable the player to stroke the same ball a plurality of times in sequence; and means for activating said detecting means associated with each said target areas in accordance with a predetermined sequence to require the player to control movement of a ball rebounding from the backboard or target by stroking the ball back to the activated target area; means for resiliently suspending said rigid target areas in the

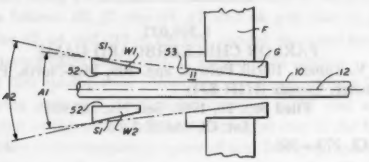
backboard in a first position whereby the target areas lie substantially in the same plane as the backboard and are permitted to move inwardly of the backboard slightly; said detecting means comprising microswitches mounted on the backboard for contact with their associated target areas upon inward movement of the target area when the target area is hit; means for limiting movement of the target area between said first position and said second innermost position; and said limiting being adjustable so that said first and second positions may be varied.

4,309,033

CLAMPING APPARATUS

Charles L. Parker, Jr., and George A. Vaughn, both of Princeton, N.J., assignors to AMF Incorporated, Plainsboro, N.J.

Filed Sep. 19, 1979, Ser. No. 77,040
Int. Cl.³ A63B *51/00*
U.S. Cl. 273—73 D **15 Claims**



1. In clamping apparatus extending through a passageway formed in the frame of a game ball racket and which clamping apparatus is for applying clamping pressure to a length of a game ball string adjacent an end thereof to clamp said length of string to said game ball racket frame, and wherein upon said length of string being clamped to said game ball racket frame and upon said string being placed in tension due to stringing and play, tensile stress of varying magnitude is produced in said clamped length of string which tensile stress is a maximum at the forward or pulled end of said clamped length of string and which tensile stress decreases to a minimum at the free or rearward end of said clamped length of string,

wherein the improvement comprises:

improved clamping apparatus for engaging said clamped length of string in graduated contact to apply non-uniform clamping pressure to said clamped length of string which non-uniform clamping pressure is minimum at said forward or pulled end of said clamped length of string where said tensile stress is maximum and which non-uniform pressure increases to a maximum at said free or rearward end of said clamped length of string where said tensile stress is minimum whereby the tendency of said clamped length of string to rupture at said forward or pulled end of said clamped length of string is reduced.

4,309,034

COMPETITIVE GAME MOVING OBJECTS THROUGH ADJACENT DEPRESSIONS IN AN INCLINED SURFACE

Takao Matsumoto, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Jan. 14, 1980, Ser. No. 111,829
Claims priority, application Japan, Jan. 16, 1979, 54-3448[U]
Int. Cl.³ A63F *9/14*; A63B *67/12*
U.S. Cl. 273—86 D **11 Claims**

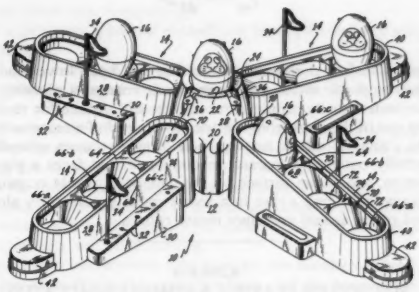
1. A toy which comprises:

a housing having an elevated object repository located on the upper periphery of the housing;

at least one peripheral section of said housing, said peripheral section having a top surface, said toy surface including a plurality of object locating means arranged along the top surface of said peripheral section along a pathway leading towards said object repository, said top surface generally inclined towards said elevated object repository;

each of said object locating means including a first opening in said top surface and a wall displaced below said first opening, a portion of said wall distal from said object repository being vertically oriented and a portion of said wall proximal to said object repository being inclined from the vertical towards said object respository;

an object propulsion means movably mounted in said peripheral section and including a plurality of object striking means equal in number to the number of said object locating means, said object propulsion means located in said peripheral section in a position locating each of said object striking means in association with said openings and displaced off-center of a line passing through the center of said opening;



at least one object, the bottom portion of said object sized to fit into said opening to position the lowermost portion of said object in said opening such that when said object is located in any one of said object locating means and said object propulsion means is moved in said peripheral section the object striking means associated with the object locating means wherein said object is located is capable of striking said object at a point on the surface of said object which is displaced off-center from a line passing through the center of said object to propel said object out of said object locating means along a line passing through the center of said object and the object striking means striking said object;

said object capable of moving along said pathway from one of said object locating means to the next adjacent object locating means and finally into said object repository each time it is struck by one of said object striking means.

4,309,035

ACTION GAME APPARATUS WITH ROTATING DISC DISPENSING UNIT

Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356

Filed Feb. 13, 1980, Ser. No. 121,137
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—237 **30 Claims**

1. A game apparatus in the form of a dispensing unit for sequentially and automatically dispensing thin, generally flat discs to a plurality of player stations disposed around the unit, said unit comprising:

a. base means;

b. container means mounted on said base means for relative rotation between said container means and said base means about an upright axis, said container means defining at least one vertically extending receptacle offset from said axis of rotation for receiving a stack of thin, generally flat discs;

c. means for effecting relative rotation between said base means and said container means; and

d. cam means fixed on said base means and on said container means, and positioned and arranged to dispense said discs sequentially and automatically to the player stations incident to said rotation between said container means and said base means,

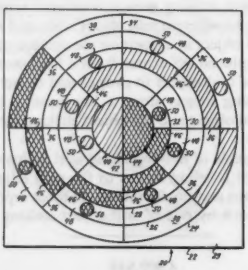
said container means being rotatable relative to said base means and said receptacle being open at its lower end, said base means defining a generally flat, smooth, continuous, upwardly directed surface positioned to underlie said open lower end of the receptacle as the container means rotates, a plurality of circumferentially arranged recesses in said surface for receiving one of the discs from the open lower end of a receptacle as the container means rotates, each of said recesses extending radially outwardly toward an outer end that faces a player station, and a cam surface on the underside of said container means for urging a disc in a recess radially outwardly along said recess as said container means rotates.

4,309,036

METHOD OF PLAYING A COMBAT SIMULATING BOARD GAME

Roscoe D. Alvey, Rte. 4, Harrisburg, Ill. 62946

Filed Aug. 29, 1980, Ser. No. 182,435
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—248 **9 Claims**



1. A method for playing a game, said game having a game board with means defining a playing surface thereon, said playing surface including a plurality of concentric rings and a circular inner area, means dividing each of said rings and said inner circle into a plurality of game piece areas, at least two groups of game pieces and a pair of dice, the method comprising the steps of:

assigning a group of game pieces to each player;

determining the player to play first;

starting play by the first player rolling the dice and moving at least one game piece onto the playing surface and around the outer ring a corresponding number of game piece areas from a designated starting game piece area;

continuing play by the second player rolling the dice and moving at least one game piece onto the playing surface and around the outer ring a corresponding number of game piece areas from a second designated game piece area;

traversing the playing surface by moving each game piece about each ring until said game piece advances to a designated game piece area in said ring, said game piece advancing from said designated game piece area into the next innermost ring and continuing its movement;

forming traveling units comprising a plurality of one player's game pieces by landing at least one game piece on the same game piece area as contains at least one other of said player's game pieces, said traveling units moving as one game piece about the playing surface;

declaring a battle by one player's game pieces landing on a game piece area occupied by another player's game pieces, the winner being the player who first amasses the greater number of game pieces on said game piece area;

capturing game pieces by winning a battle, said captured game pieces being removed from the playing surface;

returning captured game pieces to the playing surface by rolling doubles on the dice; and

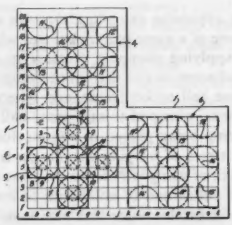
winning the game by moving a designated game piece through each of the rings and into the inner circle.

4,309,037

PARLOR CHECKERBOARD GAME

Ivan V. Tomek, 10910 Poitras, app. 308, Mt1-North, Prov. of Quebec, Canada (H1H 5J4)

Filed Sep. 16, 1980, Ser. No. 187,951
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—261 **2 Claims**



1. A parlor game to be played by two players and comprising:

(a) two sets of playing pieces of two distinct colors;

(b) a playing board on which is inscribed:

1. a checkerboard formed of two series of equally-spaced parallel straight lines intersecting themselves at right angles and the intersection points of which constitute starting points and end points of the playing pieces, said intersection points being identified by an abscissa scale and an ordinate scale;

2. three distinct playing zones, each inscribed in an imaginary square on said playing board and each composed of ten abscissa lines and ten ordinate lines, the first and second playing zones being aligned along the abscissa lines and the second and third playing zones being aligned along the ordinate lines, the three playing zones being disposed on the said checkerboard in accordance with the following coordinates in which the scale of ordinates is expressed by the numbers **1** to **20**, and the scale of the abscissa by the letters a to t, the corners of the imaginary square of the first playing zone being defined by coordinates **a11**, **a20**, **j20**, and **j11**; the corners of the imaginary square of the second playing zone being **a1**, **a10**, **j10**, and **j1**; the corners of the imaginary square of the third playing zone being **k1**, **k10**, **t10**, and **t1**;

3. The second playing zone being inscribed with:

(i) a network of first playing paths for said playing pieces comprising a playing line in the form of a cross with four branches, said cross being defined by a central square and four other squares forming each one of the four branches, said first playing line being identified by

the following coordinates: a4, a7, d7, d10, g10, g7, j7, j4, g4, g1, d1, and d4, the network including all of the abscissa and ordinate lines located inside said cross and also all the intersection points of the abscissa and ordinate lines situated within said cross;

(ii) a second playing path in each of said five squares of said cross and each extending through the four intersection points located in the center of the respective squares;

(iii) a third playing path for each of said five squares of the said cross and the coordinates of which are as follows: a5, a6, b7, c7, d6, d5, c4, and b4; also d8, d9, e10, f10, g9, g8, f7, and e7; also g5, g6, h7, i7, j6, j5, i4, and h4; also d2, d3, e4, f4, g3, g2, f1, and e1; and also d5, d6, e7, f7, g6, g5, f4, and e4;

(iv) a network of fourth playing paths constituting diagonals for each of said squares and each fourth playing path being a straight line, the coordinates of which are as follows: d1, j7; also d4, g7; also a4, g10; also a7, g1; also d7, g4, and d10 j4; the first, second, third and fourth playing paths being each of a distinctive color;

4. said first playing zone comprising a network of four fifth playing paths, all identical but oriented at 90° one with respect to the other and each starting at one of the four corners of the imaginary square of said first playing zone, the first one of said fifth playing paths being identified by the following coordinates: a20, a19, b18, c18, d19, e20, f20, g19, g18, f17, e16, e15, f14, g14, h15, i16, and j16, the second one of said fifth playing paths starting at j20 and ending at f11; the third one of said fifth playing paths starting at j11 and ending at a15; and the fourth one of said fifth playing paths starting at all and terminating at e20;

5. the third playing zone also including a network of four sixth playing paths, the shape of which is identical to the fifth playing paths but disposed in inverted position with respect to the fifth playing paths, the said sixth playing paths being also oriented at 90° one with respect to the other and each starting at one of the four corners of the imaginary square of the third playing zone, the coordinates defining the first of said sixth playing paths being k10, l10, m9, m8, l7, k6, k5, l4, m4, n5, o6, p6, q5, q4, p3, o2, and o1; the second of these sixth playing paths starting at t10 and ending at k6; the third of said sixth playing paths starting at t1 and ending at p10; and the fourth of said sixth playing paths starting at k1 and ending at t5;

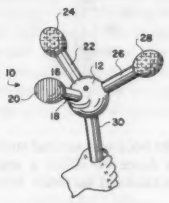
(c) each set of playing pieces including eighteen playing pieces distributed in seven categories as follows: one piece each for the first, second, third and fourth categories; two pieces for the fifth category; four pieces for the sixth category; and eight pieces for the seventh category, all pieces of the two sets, except the pieces of the third and fourth categories, being adapted to be played only on the playing paths of the second playing zone and in accordance with different movements for each category, the piece of the third category of one set of pieces and the piece of the fourth category of the other set of pieces being adapted to be played only on the playing paths of the first playing zone, and the piece of the third category of the other set and the piece of the fourth category of the one set being adapted to be played only on the playing paths of the third playing zone, the pieces of the third and fourth categories of one or the other of the two sets being adapted to be moved only simultaneously and on the same abscissa and ordinate lines as the displacement of movement of the pieces of the first and second categories, respectively, and of the same set.

4,309,038

THROW TOY

Donald M. Spoon, 7912 Roswell Dr., Falls Church, Va. 22043

Filed Feb. 7, 1980, Ser. No. 119,567
Int. Cl.³ A63B *65/00*; A63H *3/00*
U.S. Cl. 273—428 **16 Claims**



2. A throw toy, comprising:

(a) a generally spherical central hub having a relatively soft surface,

(b) four outwardly projecting spoke-like hand-graspable members integral with and diverging outwardly from the hub in different directions,

(c) two spoke-like members being of intermediate length, one spoke-like member being of a short length, and one spoke-like member being of a long length,

(d) the spoke-like hand-graspable members including at their ends a bulbous member smaller in size than the central hub which will readily fit into the palm of the hand and has a relatively soft outer surface,

(e) the two intermediate length spoke-like members extending generally in the same direction, and the long spoke-like hand-graspable member extending generally in the opposite direction,

(f) the short spoke-like member extending generally outwardly and away from a plane defined by the periphery of the bulbous member at the ends of the three other spoke-like members,

(g) the spoke-like members being relatively stiff unbending members, and

(h) the spoke-like members being marked to indicate a point value depending upon their length with greater point values being assigned to the shorter spoke-like members and lesser point values being assigned to the longer spoke-like members.

10. A throw toy, comprising:

(a) a central hub having a relatively soft surface and including thereon facial indicia elements of an animal head,

(b) a plurality of relatively stiff outwardly projecting spoke-like hand-graspable members disposed at different points on the hub and which have a relatively soft surface,

(c) the spoke-like members being of nonuniform length, and being of such size and location with respect to the facial indicia to represent protuberances on the head whereby the toy gives the overall impression of the head of an animal.

4,309,039

CONTINUOUS SELF-LOCKING SPIRAL WOUND SEAL

Stephen C. Irick, Hampton, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 20, 1979, Ser. No. 96,257
Int. Cl.³ F16J *15/06*
U.S. Cl. 277—1 **14 Claims**

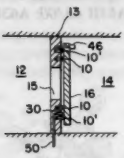
1. A spiral wound seal comprising:

a first member having a surface with a groove cut therein;

a second member having a surface adjacent to said first surface;

a continuous strip of gasket material having a width greater

than the depth of said groove, spirally wound into said groove and protruding therefrom; and

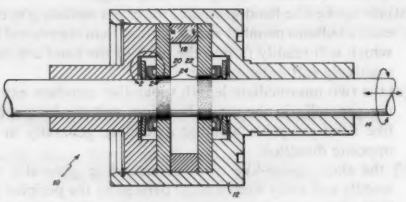


clamping means to hold said second surface against said strip with sufficient force to effect a seal between said first surface and said second surface.

4,309,040
LINEAR SEAL APPARATUS

Michel A. Pierrat, Andover, Mass., assignor to Ferrofluidics Corporation, Nashua, N.H.

Filed Jun. 3, 1980, Ser. No. 155,949
Int. Cl.³ F16J *15/54*
U.S. Cl. 277—80 **9 Claims**



1. A seal apparatus to prevent the escape of sealant lubricant from a shaft seal during axial movement of the shaft, which apparatus comprises:

(a) a shaft seal means containing a viscous sealant ferrofluid lubricant, the seal means adapted to surround the shaft and to provide sealing during movement of the shaft, wherein the shaft seal means comprises a multiple-stage, ferrofluid rotary seal, which seal comprises a permanent ring magnet having poles of opposite polarity and a pair of magnetically permeable pole elements, each pole element at the one end in a magnetic flux relationship with one of the poles of the ring element magnet, and at the other end adapted to extend into a close, noncontacting relationship with the surface of the shaft to be sealed; and

(b) a linear seal apparatus which comprises

(i) a pressure ring element having an external wall surface and characterized by a lower tapered surface, which tapered surface forms, with the surface of the shaft, a generally conical cavity, the tip of which conical cavity extends toward the shaft seal means, the ring element having an internal diameter slightly greater than the diameter of the shaft about which it is to be employed,

(ii) a scraper ring element characterized by an upper tapered surface, which surface cooperatively mates in a sliding mating relationship with the lower tapered surface of the pressure ring element, and which scraper ring element has a lower surface which fits into a close, snug relationship with and about the shaft, and which scraper element has an edge thereon, the tapered scraper ring positioned at least partially within the conical cavity, the sharp end of the scraper ring extending toward the shaft seal means and into a close, sealant, scraping relationship with the external surface of the shaft, and

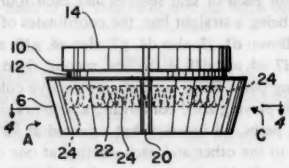
(iii) tension means to force the wall surface of the pressure ring forward into a sealing relationship with the shaft seal means, and to force the scraper ring element, within the conical cavity, toward the shaft seal means and the edge of the scraper ring element into a scraping relationship with the exterior surface of the shaft,

whereby a sealant lubricant, which escapes from the shaft seal means by the axial movement of the shaft, is scraped from the external surface of the shaft by the edge of the scraper ring element and is forced back toward the shaft seal means.

4,309,041
MACHINE TOOL COLLET

Anders A. Peterson, Elmira, and William J. Cummiskey, Horseheads, both of N.Y., assignors to Hardinge Brothers, Inc., Elmira, N.Y.

Filed Sep. 12, 1979, Ser. No. 74,725
Int. Cl.³ B23B *31/20*
U.S. Cl. 279—1 ME **4 Claims**



1. A machine tool collet including:

(a) a body having a longitudinal axis

(b) said body having front and rear faces

(c) a plurality of radial slots extending parallel to said axis dividing said body into a plurality of cooperating segments having first and second end faces

(d) said segments each having an outer surface including inner and outer areas

(e) said inner surface area including a work support surface

(f) said outer surface area including a bearing support surface

(g) said bearing support surface and said work support surface being case hardened

(h) said first and second end faces each having an annular spring receiving hole substantially transverse to its respective face

(i) said holes ending at least 1/16 inch short of said bearing support surface

(j) said hole of said first end face of one segment being aligned with said hole of said second end face of an adjacent segment to form an aligned pair of holes

(k) a coil spring mounted in and extending between each pair of said aligned holes and joining said segments together to form said body

(l) each of said segments having resilient seal means having an opening cooperating with said aligned pair of holes and mounted on said coil spring received in said cooperating aligned holes

(m) each of said seal means being bonded to its respective first end face only and said seal means unbonded to said adjacent second end face whereby said segments may be readily separated one from the other without damaging said seals

(n) said coil springs including a relaxed position maintaining said first end faces of each segment a substantial distance from said second end faces of a cooperating segment and said seals secured to said first end faces being out of engagement with said second end faces of said adjacent segments, and said coil springs including a compressed position maintaining said first end faces of each of said segments in close proximity to said second end faces of its cooperating segment and said seals secured to said first end faces being in engagement with said second end faces of said adjacent segments

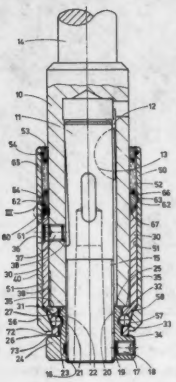
(o) said first and second faces being non-case hardened, and
(p) said seals having a thickness substantially less than the distance between said first and second end faces when said coils are in said relaxed position.

4,309,042

QUICK-CHANGE CHUCK

Otto Fauth, and Lothar Höfle, both of Ostfildern, Fed. Rep. of Germany, assignors to Otto Bilz, Werkzeugfabrik, Ostfildern, Fed. Rep. of Germany

Filed Sep. 10, 1979, Ser. No. 74,111
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1978, 2841744
Int. Cl.³ B23B 31/22
U.S. Cl. 279—75 16 Claims



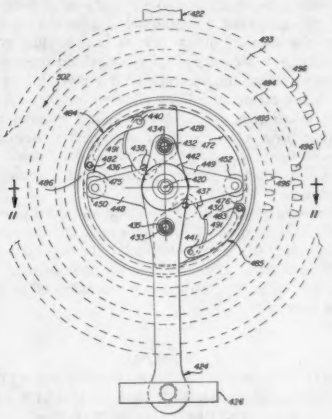
1. A quick-change chuck, comprising a shank sleeve arranged to be driven by a machine spindle and having an axis and a free annular end face; a locking sleeve arranged to hold a tool and inserted in the shank sleeve to rotate therewith, the locking sleeve having a forward end; a locking nut screwed on the forward end of the locking sleeve and having an annular face which can bear axially against the free annular end face of the shank sleeve, the locking nut having an abutment face and an annular groove with internal inclined flanks; a ball sleeve axially fitted on the shank sleeve and connected with the latter, the ball sleeve having a distal end and an annular extension piece at the distal end, the annular extension piece having one end forming an axial stop against which the locking nut can abut with the abutment face thereof, the annular extension piece having an annular face which can bear axially against the free annular end face of the shank sleeve; locking balls held radially movable in the extension piece of the ball sleeve and engageable radially in the annular groove of the locking nut between the inclined flanks of the latter; a control sleeve axially displacably held on the ball sleeve and having an end section which is axially adjacent to the locking balls and has an inner receiving part and a substantially frustoconically converging ramp face by means of which the locking balls engage, on axial displacement of the control sleeve into its locking position, radially into the annular groove of the locking nut, while the locking balls in the case of contrary axial displacement of the control sleeve into its release position, emerge radially from the annular groove liberating the locking nut with the locking sleeve and can enter the receiving part of the control sleeve; a spring located between the control sleeve and the ball sleeve and urging the former relative to the latter; a detent device arranged between the control sleeve and the ball sleeve so that the control sleeve is automatically detained in relation to the ball sleeve in its axial release position against self-effected dropping back into the locking position under the action of the spring, the detent device on introduction of the locking sleeve by means of external axial pressure upon the control sleeve can be overridden with subsequent automatic axial displacement of the control sleeve under the action of the spring into its locking position; and means for displacing the control sleeve from its release position into its locking position, the end section of the control sleeve having a first stop face, and the locking nut having an end section provided with a second stop face which faces toward the first stop face of the end section of the control sleeve, the stop faces being arranged so that upon the introduction of the locking sleeve with the locking nut the second stop face of the locking nut abuts against the first stop face of the control sleeve and displaces the latter in an axial direction from its release position into its locking position so as to form the displacing means.

4,309,043

DRIVE SYSTEM FOR BICYCLES AND OTHER APPARATUS

Lawrence G. Brown, 1629 Kuhilani St., Honolulu, Hi. 96821

Continuation-in-part of Ser. No. 6,055,017, Jul. 5, 1979. This application Oct. 30, 1979, Ser. No. 89,503
Int. Cl.³ F16H 29/04
U.S. Cl. 280—236 28 Claims



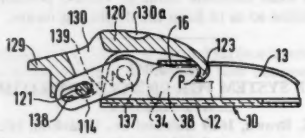
1. A drive system for driving a driven device such as the rear wheel of a bicycle or a flywheel or the like comprising;
input force applying means for applying force to the drive system;
rotatable output force transfer means for transferring output force to the driven device;
mounting means for rotatably mounting said rotatable output force transfer means and enabling rotation thereof relative to said mounting means in both forward and rearward directions;
input force transfer means for transferring input force from said input force applying means to said rotatable output force transfer means to cause rotation thereof in the forward direction and transfer of output force to the driven device;
input-output force correlation means operatively associated with said input force transfer means for correlating input-output forces by forward and rearward relative rotative displacement of said rotatable output force transfer means and said input force transfer means during each revolution of the drive system; and
locking means operatively associated with said drive system and being movable between a locked position and an unlocked position relative thereto for selectively disabling and enabling said input-output force correlation means relative to said rotatable output force transfer means.

4,309,044

CROSS-COUNTRY SKI BINDING

Manfred Schmidt, Sindelfingen, Fed. Rep. of Germany, assignor to Vereinigte Baubeschlagfabriken Gretsch & Co., GmbH, Leonberg, Fed. Rep. of Germany

Filed Nov. 20, 1978, Ser. No. 961,930
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1977, 2754005
Int. Cl.[3] A63C 9/10
U.S. Cl. 280—615 21 Claims



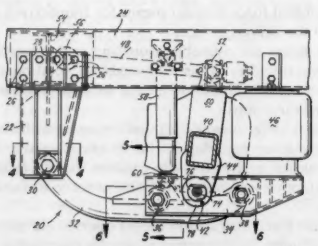
1. Cross-country ski binding comprising:
baseplate means fixedly attachable to a ski,
retaining element means engageable with a ski boot sole extension at a first effective pivot joint to hold said sole extension against longitudinal displacement when said retaining element means is in an in-use skiing position,
and guide arm means pivotally connected to said retaining element means at a second effective pivot joint and to said baseplate means at a third effective pivot joint such that said guide arm means and retaining element means together form a toggle lever with said retaining element means being movable through a dead-center position between a lifted release position and a lowered in-use position,
wherein one of said effective second and third pivot joints is resiliently supported or configured in the longitudinal direction of the ski with respect to the other of said second and third pivot joints and the ski or boot sole extension, thereby assuring elastic force retention of said ski boot sole extension.

4,309,045

AIR SPRING SUSPENSION SYSTEM WITH PARALLELOGRAM STABILIZED AXLE AND ANTI-ROLL CONTROL

John E. Raidel, Rte. 9, Box 400-M, Springfield, Mo. 65804

Filed Jan. 21, 1980, Ser. No. 113,710
Int. Cl.[3] B60G 11/26
U.S. Cl. 280—711 11 Claims



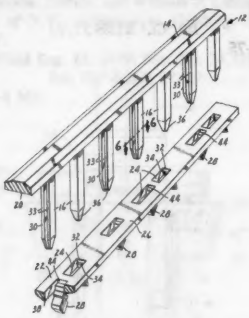
1. A vehicle suspension comprising a first beam, means for pivotally mounting the first beam to the vehicle chassis, a second beam, means for resiliently connecting the first beam to the second beam to permit limited longitudinal oscillation therebetween, spring means for extending between the second beam and the vehicle chassis, a torque rod adapted for pivotal connection between the axle and the chassis, and means for pivotally mounting the vehicle axle to the second beam so that said resilient connection means controls axle oscillation with respect to the longitudinal axis of the axle.

4,309,046

BINDING ELEMENT

Joe D. Giulie, Palo Alto, Calif., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 1, 1977, Ser. No. 812,054
Int. Cl.[3] B42D 1/00
U.S. Cl. 281—21 R 10 Claims



1. A binding element adapted for binding an apertured stack of paper into a book, said binding element comprising:
a first elongate strip having a contact surface along one side adapted to engage the surface of a said stack of paper;
a plurality of spaced elongate studs projecting normally from the contact surface of said first strip;
a second elongate mating strip having a length substantially corresponding to the length of the first strip, an engaging surface along one side adapted to engage a said stack of paper, an outer surface opposite said engaging surface, and walls between said engaging surface and said outer surface defining a plurality of openings through said second strip of sizes larger than the cross section of said studs and spaced to freely receive said studs; and
a plurality of blocks, each of said blocks being mounted by a thin web to said second strip at said outer surface along a different one of said openings and being adapted to be pressed into the adjacent opening to force a stud therein against the wall of the opening opposite the block to forcefully engage adjacent locking surfaces therebetween;
one of said locking surfaces being partially defined by at least one tooth and the other of said locking surfaces being free of teeth and being defined by at least one longitudinally extending rib, which rib is deformable by said tooth when said locking surfaces are brought into forceful engagement by said blocks.

4,309,047

PRESSURE-SENSITIVE OR HEAT-SENSITIVE RECORDING MATERIAL

Jean C. Petitpierre, Kaiseraugst, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 30, 1980, Ser. No. 192,405
Claims priority, application Switzerland, Nov. 9, 1979, 10048/79
Int. Cl.[3] B41L 1/20
U.S. Cl. 282—27.5 14 Claims

1. A pressure-sensitive or heat-sensitive recording material which comprises in its colour reactant system, as developer for the colour former, at least one compound of the formula

$$R_1-X-\underset{\underset{S}{\|}}{C}-N(R_2)-\underset{\underset{OH}{|}}{CH}-Q-Y_m \quad (I)$$

wherein X is the direct bond or

$$-\underset{\underset{R_3}{|}}{NR_3},$$

each of R_1, R_2 and R_3 independently is hydrogen or unsubstituted or substituted alkyl, aryl or aralkyl, or R_1 and R_3, together with the nitrogen atom to which they are attached, are a 5- or 6-membered heterocyclic radical, Q is carbon or an unsubstituted or substituted hydrocarbon radical,

Y is halogen, and m is 1 to 3.

4,309,048

ELEMENT FOR CONNECTING AN ACCESSORY INSTRUMENT TO A VACUUM CLEANER

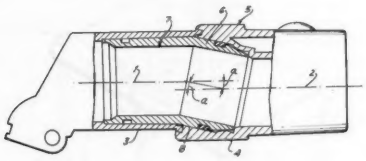
Heinz-Jürgen Ahlf, Berg. Gladbach, and Rolf Strohmeyer, Wuppertal, both of Fed. Rep. of Germany, assignors to Vorwerk & Co. Interholding GmbH, Wuppertal, Fed. Rep. of Germany

Filed Dec. 11, 1979, Ser. No. 102,852

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1978, 2853898

Int. Cl.³ F16L *27/00*; A47L *9/24*

U.S. Cl. 285—7 **3 Claims**



1. A connecting element for connecting an accessory instrument to a vacuum cleaner, comprising a front portion having a central axis and being tiltably connectable with an accessory instrument; a connecting portion having a further central axis and connectable with a vacuum cleaner, said connecting portion being connected with said front portion rotatable between a normal relative position and a plurality of further relative positions; and means for rotatably connecting said connecting portion with said front portion so that in said normal position the central axes of said portions extend rectilinearly in one direction, whereas in said further positions the central axes of said portions extend at angles relative to one another, said connecting means being formed by a rotary joint including a shell section formed in the interior of said connecting portion, and a central section which is separate from said front portion and has a first end part arranged in the interior of said front portion and a second end part extending axially outwardly beyond the latter and into the interior of said shell section, said second end part of said central section having a radially outer surface which is inclined relative to said first-mentioned central axis, whereas said shell section has a radially inner surface which is inclined relative to said second-mentioned central axis, said inclined surfaces cooperating with one another for rotation of said portions between said positions, and said inclined surfaces as well as all parts of said joint being arranged inside said portions.

4,309,049

RAPID DISCONNECT PIPE COUPLING DEVICE FOR CRYOGENIC SERVICE

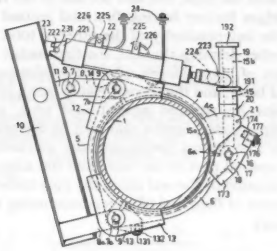
Bernard Chevallier, Marsangy, France, assignor to FMC Corporation, San Jose, Calif.

Filed Oct. 16, 1978, Ser. No. 952,015

Claims priority, application France, Oct. 19, 1977, 77 31514

Int. Cl.³ F16C *17/06*

U.S. Cl. 285—18 **10 Claims**



1. A coupling device for releasably connecting two pipes together while operating at cryogenic temperatures, each pipe having a flange thereon, said device comprising:

an articulated collar having a plurality of arcuate collar segments, each of said segments having means for securing the flanges of said pipes together when said collar segments are pressed in a radially inward direction;

pivot means for interconnecting said collar segments into a generally circular configuration having a pair of adjacent unconnected end portions;

means for clamping said end portions of said collar segments together and for pressing said collar segments against said pipe flanges to secure said pipes in a fluid-tight connection;

a plurality of flexible protective members;

means for securing each one of said protective members about a corresponding one of each of said pivot means, said protective members being movable to aid in breaking any ice which may form about said collar segments; and

power means for forcing said end portions apart and for pivotally moving said collar segments radially outward from said pipe flanges.

4,309,050

PIPE FITTINGS, AND IN PARTICULAR FOR HIGH PRESSURE FLUID PIPES

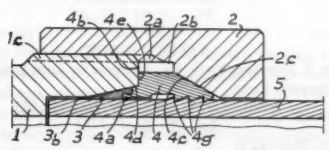
Andre Legris, Saint Maur, France, assignor to Societe Anonyme dite: Legris, France

Filed Jul. 1, 1980, Ser. No. 164,894

Claims priority, application France, Jul. 6, 1979, 79 17572

Int. Cl.³ F16L *19/06*

U.S. Cl. 285—341 **6 Claims**



1. An improvement to pipe fittings, and in particular to pipe fittings for high pressure fluid pipe systems, said fittings being of the crimping ring type comprising a rigid body provided with a bore at one end to receive a pipe, the wall of said bore having a conical part, a threaded outer portion at said end, a rigid nut adapted to be screwed into said threaded outer por-

tion, said nut also having a bore to receive the pipe, the wall of the last said bore also having a conical part, a ring made of ductile material for crimping on the pipe and disposed between said conical parts during the crimping operation, the conical part of said nut being in contact with said ring, said ring having circular ridges on one portion thereof which are engaged in the pipe during the crimping operation and being provided at one end with a member which constitutes a seal of a deformable material, the hardness of which is less than the remainder of the ring, said seal being in contact with the conical part of said body and with the pipe, and said portion of the ring having the circular ridges further having first and second means which achieve, one independently of the other, a total anti-extrusion of the member forming the seal, the first means constituting a conical part of given length which complements the conical part of said body, and the second means being constituted by a thin circular lip situated against said pipe, said lip being crimped and crushed against said pipe by the seal itself during fitting, the first means preventing the extrusion of the seal along the conical part of the body and the second means preventing extrusion of the seal along the pipe under the action of high pressures of fluid and of water-hammering resulting from fluid pressure.

4,309,051

KNOTTER APPARATUS WITH SHEARPLATE FOR ROTARY KNIFE

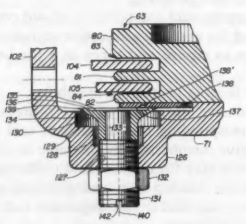
Marc G. Vansteelant, Zedelgem, Belgium, assignor to Sperry Corporation, New Holland, Pa.

Filed Jun. 20, 1980, Ser. No. 161,627

Claims priority, application United Kingdom, Jun. 22, 1979, 21877/79

Int. Cl.³ A01D *59/04*

U.S. Cl. 289—2 **7 Claims**



1. A knotter apparatus comprising:

a twine holder including a plurality of rotating twine discs, said discs defining a plurality of sets of notches;

a shear plate connected to rotate with said twine discs, said plate defining notches substantially aligned with said disc notches;

a knife connected to said twine holder having a cutting edge in knife sharpening engagement with said shear plate; and

said shear plate further defining a plurality of cleaning grooves.

4,309,052

SAFETY HOOK

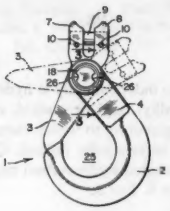
Walker E. Drayton, York, Pa., assignor to Acco Industries Inc., Bridgeport, Conn.

Filed Mar. 7, 1980, Ser. No. 128,183

Int. Cl.³ B66C *1/36*

U.S. Cl. 294—82 R **8 Claims**

1. A safety hook comprising a hook body having a bowl section, a bifurcated end defining two spaced ear portions, a latch extending between said spaced ear portions, and an axle-pin extending through said ear portions and said latch to rotatably connect said latch with respect to said hook body whereby said latch may be moved to open and closed positions with respect to said hook body; the improvement comprising in that said axlepin is fixed with respect to said latch whereby relative movement between said latch and said axlepin is prevented, in that said axlepin has a locking surface thereon, in having a locking pawl adapted to engage said locking surface to lock said axlepin and latch against rotational movement with respect to said hook body, in having spring means for urging



said locking pawl into engagement with said locking surface, and in that said locking pawl includes a finger actuation surface thereon positioned outside said bowl section and closely adjacent said axlepin whereby said pawl may be moved against said spring means to move said pawl out of engagement with said locking surface.

4,309,053

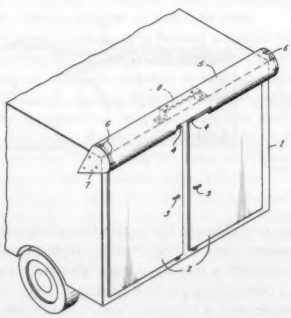
SPOILER FOR FLATBACK VEHICLES

Stephan C. Lett, 9103 Rockmore, Houston, Tex. 77064

Filed Dec. 17, 1979, Ser. No. 104,008

Int. Cl.³ B62D *35/00*

U.S. Cl. 296—1 S **1 Claim**



1. The combination of a spoiler and flat back vehicle having outwardly opening rear doors comprising a concavo-convex rigid deflector of greater length than the width of the vehicle, and having end members mounted thereon and at right angles thereto, elongated slots adjacent each end of said deflector providing variable mounted means for vehicles of various widths, said vehicle is provided with outwardly opening rear doors, said doors having latch members extending upwardly into said truck body and wherein said deflector has a notch formed in the lower most margin thereof midway of the respective ends, to act in combination with said doors to provide clearance for said latch members when said doors are opened.

4,309,054

WALL STAKES FOR VEHICLE SIDEWALL PANELING

John D. Allen, 10302 S. 144th St., Omaha, Nebr. 68138

Filed Jul. 14, 1980, Ser. No. 168,089

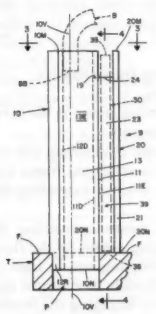
Int. Cl.³ B62D *25/02*

U.S. Cl. 296—36 **12 Claims**

1. A wall stake adaptable for removable insertion into a flat

bed vehicle provided with a plurality of depending pockets, said wall stake being adaptable for supporting upright and laterally extending vehicle sidewall paneling and comprising primary and secondary upright members in slidably associated dovetailed relationship;

A. said primary member being a tubular post extending downwardly along a vertical-axis for a finite-extent from a header at the post top-end to a foot at the post bottom-end and which foot is removably implantable into a vehicle depending pocket, the tubular shape of said post being partially provided by a vertical front-wall having a laterally extending outer-face substantially parallel to and transversely separated from the front-wall inner-face, said tubular post primary member having an upright external-contour surrounding the vertical-axis and that is partially provided by the front-wall outer-face and having an upright internal-contour, the upright internal-contour being of constant cross-sectional geometric shape and size surrounding said vertical-axis, a portion of the internal-contour being provided by the front-wall laterally extending inner-face, said internal-contour commencing at the laterally separated ends of the front-wall upright inner-face being transversely rearwardly convergent of the front-wall, less than the entire finite-extent of the front-wall and commencing at a single end only being provided with a vertically extending slotted length located substantially midway the front-wall upright ends, said slotted length



providing a horizontal front-wall abutment-terminus located between the primary member top-end and bottom-end;

B. said dovetailed slidably associated secondary member providing a pair of upright and laterally extending paneling channels located on opposite sides of the post member slotted length and also internally bracing to strengthen the post member, said secondary member extending along said vertical-axis and having from upper-end to lower-end a finite-height, said secondary member having along the major proportion of the finite-height a uniform cross-sectional shape including:

i. a vertical-plate extending transversely through the post member front-wall vertically slotted length, the vertical-plate having a recessed lead-end whereby the vertical-plate has an arrested-height less than the finite-height, the vertical-plate horizontal lead-end and the front-wall abutment-terminus being of substantial co-elevation,

ii. a pair of substantially co-planar guide-plates extending in opposite lateral directions from the attached vertical-plate, said guide-plates being directionally transversely forwardly separated from the post member front-wall to provide in concert therewith laterally extending upright paneling channels, and

iii. a web nonrotatable about the vertical-axis and slidably associated with said inner-face and said rearwardly convergent portions of the post internal-contour to internally brace and enhance the structural strength of the implanted post member, said web being attached to the vertical-plate, said web at the post header defining the majority of the cross-sectional shape of the wall stake header bore, the remainder of the bore cross-sectional shape being provided by the rearward portion of the tubular post member.

4,309,055

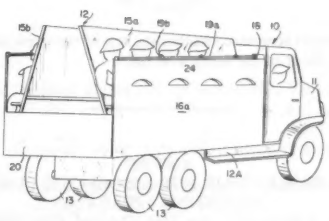
TROOP CARRIER

William J. H. Law, Port Chester, N.Y., assignor to AAL Enterprises, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 143,447, Apr. 24, 1980. This application May 14, 1980, Ser. No. 149,635

Int. Cl.³ B60N *1/00*

U.S. Cl. 296—63 **1 Claim**



1. In a troop carrier vehicle having a carrier body adapted to transporting troops which includes an armored panel extending lengthwise of said body in approximately upright position having an exterior side set inwardly from one side of said body, a side panel on said body located along said one side of said body on said exterior side of said armored panel pivotly mounted along the lower edge thereof and seating means positioned along the exterior side of said armored panel between said armored panel and said side panel, the improvement in which said side panel has a height greater than the height above ground of the lower edge of said side panel whereby said side panel can be lowered from an upright position in front of said panel outwardly of said body portion to form a ramp providing lateral access to and egress from said body portion.

4,309,056

AIR DEFLECTOR SUPPORT STRUCTURE

Alvin L. Long, Civilian Gen. Del., Beale A.F.B., Calif. 95903

Filed Nov. 26, 1979, Ser. No. 97,524

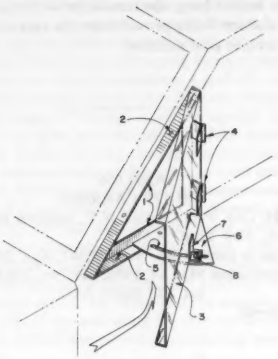
Int. Cl.³ B60J *1/20*

U.S. Cl. 296—91 **1 Claim**

1. A wind deflector and support structure for use with a vehicle side door having a single vertically moveable window, the improvements comprising:

A triangle shaped support structure including means for fixedly securing same to the front and bottom edge of the vehicle door window opening, the vertical rail of the support structure hinging and supporting a channel shaped air deflector for generating a flow of air into the vehicle in response to said vehicles forward movement, the horizontal rail of the support structure having a arm with a slot corresponding with a hole in a extension on the bottom edge of the air deflector, a bolt extending through

the slot and hole having a wingnut to regulate the angle of the air deflection into the vehicle, the angle rail of the



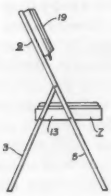
support structure attaches the top of the vertical rail with the front of the horizontal rail.

4,309,057

FOLDABLE CHAIR AND ASSOCIATED CUSHION ADJUSTING APPARATUS

John M. Lindley, P.O. Box 1464, Oakland, Calif. 94604

Filed Apr. 18, 1980, Ser. No. 141,388
Int. Cl.³ A47C *1/12, 3/20*
U.S. Cl. 297—58 **9 Claims**



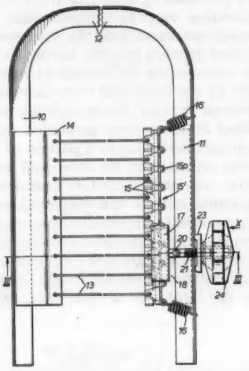
1. In combination, a folding chair including a seat comprising a frame having a floor, a cushion assembly including a cushion and cushion support telescoping with said frame to provide for a retractable cushion assembly, means normally urging said cushion assembly to its retracted position with respect to said seat frame, spring means between the floor of said frame and said cushion support and in a lowered position when said cushion assembly is in its retracted position, and means for elevating said spring means against said cushion support to elevate said cushion assembly from its retracted position, said means for elevating said spring means including a slide bar resting on the floor of said frame and directed toward the front of said frame, means for guiding movement of said slide bar toward and away from the front of said frame, a support for said spring means, said support being connected to that end of said slide bar facing toward the rear of said frame and adapted to move with said slide bar, means for anchoring said spring means to said spring means support, whereby said spring means will move with said slide bar and support, and means responsive to movement of said slide bar toward the front of said frame for raising said spring means into pressure engagement with said cushion support to elevate said cushion to its normally usable position.

4,309,058

LOAD SUPPORTING FRAME

Geoffrey W. Barley, Brookfield, Wis., assignor to UOP Inc., Des Plaines, Ill.

Filed Mar. 11, 1980, Ser. No. 129,505
Claims priority, application United Kingdom, Mar. 21, 1979, 09921/79
Int. Cl.³ A47C *7/14*
U.S. Cl. 297—284 **5 Claims**



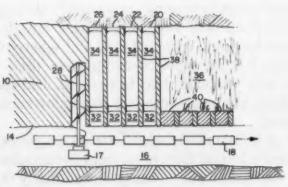
1. A load-supporting frame having
opposed frame sides,
flexible load-supporting means in the form of a membrane or a plurality of filaments,
first connecting means connecting one side of said load-supporting means to one of said frame sides,
an elongate flexible member extending alongside the other of said frame sides,
second connecting means connecting the opposite side of said load-supporting means to the flexible member,
a variable length coupling and at least one connector both connecting said flexible member to said other frame side,
said coupling slidably engaging the flexible member and said other frame side for movement therealong, and
means operable to vary the length of said coupling thereby to vary the local tension applied to the load-supporting means.

4,309,059

MINING METHOD

Myles A. Walsh, 143 N. Main St., Cranbury, N.J. 08512

Filed Jan. 11, 1978, Ser. No. 868,717
Int. Cl.³ E21D *15/30*
U.S. Cl. 299—11 **11 Claims**



1. A mining method for improving the tonnage of ore recoverable from an ore seam having an overburden, said method comprising the steps of:
A. providing an access wall to the seam;
B. removing an elongate segment of the ore by working into the seam from the access wall to produce a chamber,

supporting the overburden by introducing at least one inflatable, flexible bladder disposed inwardly within said chamber, supporting the access wall by introducing an inflatable, flexible bladder into the mouth of said chamber, and inflating the bladders;

C. serially repeating step B to produce a series of supported chambers substantially parallel to each other and separated by a thin rib of ore, the inflated bladders in said chambers enabling the next successive chamber to be formed closely adjacent the previously formed chamber;

D. at a chamber remote from the most recently formed chamber, employing a bladder adjacent the access wall as a form by forcing a flowable, hardenable composition therewithin, and hardening said composition to provide a support structure preventing collapse of said access wall; and

E. serially repeating step D.

4,309,060

ANTI-LOCKING WHEEL CONTROL SYSTEM

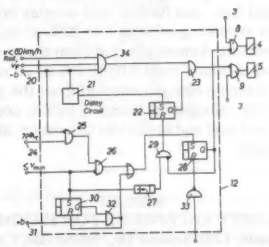
Heinz Leiber; Volker Braschel, both of Leimen; Wolf-Dieter Jonner, and Hans-Herbert Wupper, both of Sandhausen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 18, 1978, Ser. No. 952,351

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1977, 2758529

Int. Cl.³ B60T *8/04*

U.S. Cl. 303—106 **20 Claims**



1. An anti-locking wheel control system in which control signals for the variation of the brake pressure are derived from the rotary motion behavior of the vehicle wheels and in which a test circuit is provided, which initiates a test for at least one wheel brake when a signal appears which indicates a tendency toward locking, in which test the over-braked vehicle wheel enters a state of high slippage, whereby the test circuit determines how the wheel behaves at a given coefficient of friction between road surface and tire, and whereby on the basis of this determination, the test circuit either permits the state in which the brake pressure is regulated or else switches on the state in which the control system is made ineffective for at least some of the wheel brakes, characterized by means incorporated in said test circuit for maintaining the brake pressure substantially constant during the test and by means for determining by monitoring at least one wheel during the deceleration phase, whether the vehicle wheel is running on a base with a coefficient of friction μ, where the μ-slippage curve rises with increasing slippage above a predetermined slippage value whereby the control system is made ineffective if such a coefficient of friction is determined.

4,309,061

UNLIMITED SLIDING BALL SPLINE ASSEMBLY

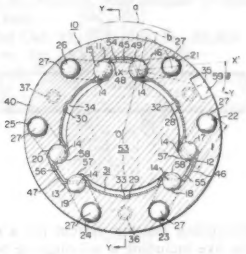
Hiroshi Teramachi, 2-34-8, Higashi-Tamagawa, Setagaya-ku, Tokyo, Japan (158)

Filed Jan. 10, 1980, Ser. No. 110,989

Claims priority, application Japan, Jan. 20, 1979, 54-4462

Int. Cl.³ F16C *29/06*

U.S. Cl. 308—6 C **4 Claims**



1. In an unlimited sliding ball spline assembly including:

(a) an outer sleeve (**10**) with two end faces, and an inside wall;

(b) two end members (**38**, **38'**) fixedly secured to the two end faces;

(c) a ball holder (**31**) closely disposed and fixed within a spacing formed by said outer sleeve and the two end members, said ball holder having bearing surfaces, and balls (**14**, **27**), held in said ball holder; in combination:

(d) a plurality of equally spaced grooves (**11**, **12**, **13**) defined in the inside wall of said outer sleeve, said grooves extending along the axis of the sleeve and having an approximately U-shaped cross section, said grooves (**11**, **12**, **13**) having side walls and each of said side walls of each of said grooves forming an axially-extending concave bearing surface for loaded balls, said bearing surface having a radius of curvature substantially identical to that of the balls;

(e) a plurality of through holes (**21–26**) for non-loaded balls formed in the outer sleeve in such a manner that said through holes are radially and outwardly spaced from their respective bearing surfaces of the outer sleeve, the contact angle of the balls is rendered small so as to make it close to the direction of torque and the through holes are formed in the direction of the contact angle, thereby allowing the outer diameter of the outer sleeve to be formed small;

(f) a plurality of approximately U-shaped end grooves (**42**) adapted to change the travelling direction of their respective loaded or non-loaded balls defined in said two end members (**38**, **38'**);

(g) a plurality of axial ribs (**45**, **46**, **47**) equipped in said ball holder, said axial ribs extending outwards in registration with said grooves (**11**, **12**, **13**) formed in the inside wall of the outer sleeve, each of said ribs having a pair of inclined surfaces which are disposed in face-to-face relation with their corresponding bearing surface formed for loaded balls in the side walls of said grooves formed in the inside wall surface of the outer sleeve, each of said inclined surfaces defining therethrough an axially extending slit (**50**) with ends, said slit being equipped at each end thereof with a tongue (**51**); and,

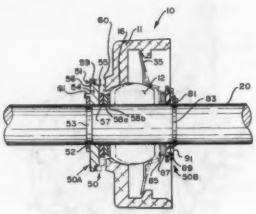
(h) said balls filling in the through holes, between the bearing surfaces of the outer sleeve and the respective bearing surfaces of the ball holder, as well as the U-shaped end grooves (**42**) defined in the end members.

4,309,062

BEARING MOVEMENT PREVENTING SYSTEM

Robert F. Bischoff, Florissant, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Sep. 21, 1979, Ser. No. 77,854
Int. Cl.³ F16C 23/04, 25/04
U.S. Cl. 308—29 10 Claims



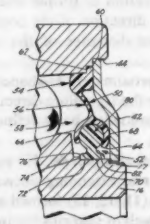
1. In a self-aligning bearing system for a dynamoelectric machine or the like including a self-aligning bearing number, bearing support structure defining a race for said self-aligning bearing member, a retainer spring for holding said self-aligning bearing member in said bearing support structure, said self-aligning bearing member having an axial opening therethrough, a shaft received in said axial opening, wherein the improvement comprises: means for preventing excessive axial movement of said self-aligning bearing member in at least one axial direction of said shaft, this last-said means being on one side of said self-aligning bearing member opposite said retainer spring for transferring thrust between said shaft and said bearing support structure, said means being engageable with said bearing support structure thereby to prevent excessive axial movement of said shaft and said self-aligning bearing member relative to said bearing support structure and to prevent overstressing of said retainer, said movement preventing means comprising of stop fixed against axial movement on said shaft and a thrust collar interposed between said stop and said bearing member.

4,309,063

BEARING SEAL

Siegfried K. Weis, Byron Center, Mich., assignor to C. L. Frost & Son, Inc., Grand Rapids, Mich.

Filed Jun. 2, 1980, Ser. No. 155,506
Int. Cl.³ F16C 33/78; F16J 15/32
U.S. Cl. 308—187.2 31 Claims



8. A bellows seal for a bearing assembly of the type having an inner race, an outer race and a plurality of rolling elements rotatably disposed between said inner and outer races, said seal comprising:

a first annular member having an outer circumferential portion adapted to be held by the outer race, a flexible central portion and an inner circumferential sealing portion, said sealing portion defining a radially opening, generally semicircular groove; and

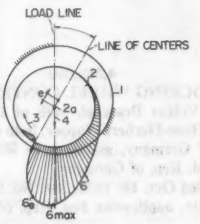
a second annular member having a circumferentially extending seal portion of a generally toroidal shape, said seal portion being disposed within said semicircular groove of said first annular member, said sealing portion and said seal portion dimensioned so that said sealing portion may swivel about said seal portion during operation of the bearing assembly whereby said seal will accommodate radial and axial movement of said races and seal lubricant in and dirt out of said bearing assembly.

4,309,064

BEARING OF AN INTERNAL COMBUSTION ENGINE AND PROCESS FOR PRODUCING THE SAME

Tatsuhiko Fukuoka, Aichi; Takashi Fukuda, and Shinichi Okamoto, both of Toyota, all of Japan, assignors to Taiho Kogyo Co., Ltd., Aichi, Japan

Filed Jan. 4, 1980, Ser. No. 109,488
Claims priority, application Japan, Sep. 28, 1979, 54-125543; Sep. 28, 1979, 54-125544; Dec. 14, 1979, 54-161568
Int. Cl.³ F16C 33/12
U.S. Cl. 308—237 R 13 Claims



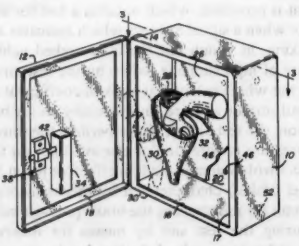
1. A bearing to be used in an internal combustion engine, wherein said bearing comprises a base and an overlay layer formed on said base, and further, said overlay layer comprises an alloy layer consisting of from 5 to 20% of tin, from 0.05 to 10% of at least one element selected from the group consisting of indium and thallium, from 0.05 to 5% of at least one, wear resistance-enhancing element selected from the group consisting of antimony, manganese, bismuth, nickel, copper, calcium and barium, and lead and impurities in balance, all percentages being by weight.

4,309,065

SECURITY ENCLOSURE FOR HANDGUNS

Peter R. Pappas, 1201 Sesame Dr., Sunnyvale, Calif. 94087

Filed Apr. 16, 1979, Ser. No. 30,235
Int. Cl.³ A47B 81/00; E05B 65/46
U.S. Cl. 312—319 10 Claims



1. A security enclosure for handguns comprising:

a rigid rectangular box having a front opening;

a rigid door pivotally attached to one side of said box and pivotable between an open position allowing access to the interior of said box and a closed position closing said box;

locking means for locking said door in said closed position;

gun-holding means pivotally affixed to the interior of said box and adapted to swing independent of said door between a retracted position wherein the holding means and the held gun are located within the confines of the box and an extended position wherein at least the handle of the gun is caused to extend through said first opening; and

means for causing said gun-holding means to swing from said retracted position when said door is closed to said extended position as said door is opened.

4,309,066

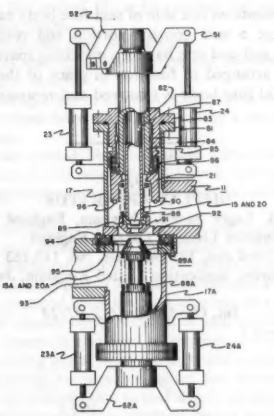
METHOD AND APPARATUS TO FABRICATE IMAGE INTENSIFIER TUBES

E. Vincent Patrick, Lorton; Howard K. Dickson, Alexandria, and Howard L. Dunmire, Stafford, all of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 93:0,264, Aug. 2, 1978, abandoned. This application Jan. 18, 1980, Ser. No. 113,156

Int. Cl.³ H01J *9/18, 9/46*

U.S. Cl. 316—19 **3 Claims**



1. The method of fabricating a plurality of vacuum tubes in a continuously evacuated environment by means of a series of different steps, some of said different steps being performed simultaneously on different tubes; each tube having an anode and a cathode as subassemblies, the fabrication of said cathode in the presence of said anode adversely affecting the quality of said anode; comprising the steps of:

simultaneously sealing tools, parts and materials required to fabricate a plurality of said anode subassemblies in a first evacuated vacuum chamber;

simultaneously sealing tools, parts and materials required to fabricate a plurality of said cathode subassemblies in a second evacuated vacuum chamber having a wall portion in common with said first chamber, said wall portion containing a lock gate; fabricating said first and second subassemblies in said first and second sealed vacuum chambers, respectively;

serially testing each subassembly separately in said sealed chambers to locate defective parts;

serially replacing defective parts of each subassembly with new parts in said sealed chambers;

serially retesting said subassembly in said sealed chambers;

repeating the two previous steps when additional defective parts are found;

serially transporting said anode subassemblies through said lock gate to said cathode chamber containing said cathode subassemblies;

serially completing assembly of said tubes in said cathode chamber; and

simultaneously removing a plurality of said completely assembled tubes from said cathode chamber.

4,309,067

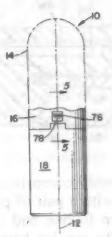
MECHANICAL AND ELECTRICAL CONNECTION INTERFACE FOR A BATTERY CONTAINING PACK

Robert H. Riley, Jr., Towson, Md., assignor to Black & Decker Inc., Newark, Del.

Filed Oct. 17, 1979, Ser. No. 86,026

Int. Cl.³ H01R *13/639*

U.S. Cl. 339—91 R **7 Claims**



1. A dual-motion separable connection interface, having a first longitudinal axis, for connecting a battery-containing pack with a battery utilizing device, having a second axis, said connection interface comprising:

a plurality of rigid tabs connected to a base surface of said battery-containing pack, two of said tabs being separated from each other along said first longitudinal axis by a tab space and positioned on each opposite side of said first longitudinal axis, said two tabs directed laterally outwardly a first uniform distance from said longitudinal axis and spaced from said base surface of said battery pack to define lug-receiving slots therebetween;

a plurality of rigid lugs connected to a base surface of said battery utilizing device, two of said lugs separated from each other along said first longitudinal axis by a lug space and positioned on each opposite side of said first longitudinal axis, said two lugs directed laterally inwardly and being spaced a second uniform distance from said longitudinal axis, and being further spaced from said base surface of said battery pack to define tab-receiving slots therebetween;

locking means for preventing motion along said first longitudinal axis of said battery pack relative to said battery utilizing device to prevent separation thereof, said locking means including a movable stem mounted on said battery utilizing device and means for biasing said stem outwardly towards said battery-containing pack from a first position to a second position;

said locking means further including a rigid abutment operatively associated with said stem and connected to, and extending outwardly from said battery-containing pack towards said battery utilizing device;

one of said two tabs being received in one of said lug spaces, one of said two lugs being received in one of said tab spaces, and said abutment moving said stem from said second position inwardly to said first position, when said battery-containing pack is moved towards said battery utilizing device in a direction parallel to said second axis to initiate connection;

said tabs being received in said tab receiving slots, said lugs being received in said lug-receiving slots, and said stem moving from said first position to said second position when said battery-containing pack is moved away from said stem in a direction parallel to said first longitudinal axis to complete connection; and

said battery-containing pack and said battery utilizing device being separable by relative motion therebetween parallel to said first longitudinal axis, followed by relative motion therebetween parallel to said second axis.

4,309,068

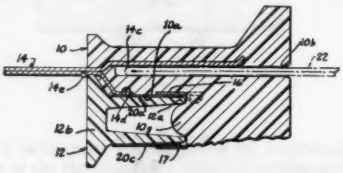
FUSED PLUG ASSEMBLY WITH SPARE FUSE ELEMENTS

Joseph M. Ahroni, P.O. Box 3907, Seattle, Wash. 98124

Filed Dec. 5, 1979, Ser. No. 100,410

Int. Cl.³ H01R *13/68*

U.S. Cl. 339—147 P **8 Claims**



1. A fused plug assembly comprising:

a plug body formed with a pair of parallel spaced elongated prong sockets open to one end of the plug body and a central elongated fuse socket having a mouth open to the opposite end of the plug body,

a pair of parallel spaced prong members projecting as prongs from said opposite end of the plug body in alignment with said prong sockets, said prong members each having two legs within the plug body, one leg being exposed to a respective of said prong sockets and the second leg being exposed by a contact portion to the fuse socket,

a pair of wire leads extending from the plug body between the ends of the latter and having a pair of spaced wire contacts connected thereto, said wire contacts being exposed to said fuse socket in general alignment with and spaced from respective of said contact portions, and

a push-in fuse unit having a fuse body generally square in cross-section slidably received in the fuse socket with its head located between said prongs, said unit having a pair of spaced elongated fuse elements on opposite sides of said fuse body each arranged to engage a said contact portion and respective wire contact, and having spare fuse elements on the sides thereof between said opposite sides of the fuse body.

4,309,069

FUSED PLUG ASSEMBLY WITH FUSE UNIT HAVING SPARE FUSE ELEMENTS

Joseph M. Ahroni, P.O. Box 3907, Seattle, Wash. 98124

Continuation-in-part of Ser. No. 13,319, Feb. 21, 1979, Pat. No. 4,274,698. This application Dec. 28, 1979, Ser. No. 108,131

The portion of the term of this patent subsequent to Jan. 5, 1999, has been disclaimed.

Int. Cl.³ H01R *13/68*

U.S. Cl. 339—147 P **6 Claims**

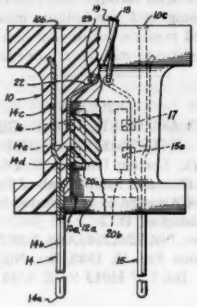
1. A fused plug assembly, comprising:

a plug body formed with a pair of parallel spaced elongated prong sockets open to one end of the plug body and a central elongated fuse socket having a mouth open to the opposite end of the plug body;

a pair of parallel spaced prong members projecting as prongs from said opposite end of the plug body in alignment with said prong sockets, said prong members each having two legs within the plug body, one leg being exposed to a respective of said prong sockets and the second leg being exposed by a contact portion to the fuse socket;

a pair of wire leads extending from the plug body between the ends of the latter and having a pair of spaced wire contacts connected thereto, said wire contacts being exposed to said fuse socket in general alignment with and spaced from respective of said contact portions and said wire contacts and contact portions being coplanar;

a push-in fuse unit having a fuse body slidably received in the fuse socket with its head located between said prongs, said unit having an active pair of parallel spaced elongated



fuse elements on one side of said fuse body each arranged to engage a said contact portion and respective wire contact, and said unit having a matching spare pair of fuse elments arranged to function in place of the active pair when said fuse body is removed and repositioned in said socket.

4,309,070

DISPLAY APPARATUS

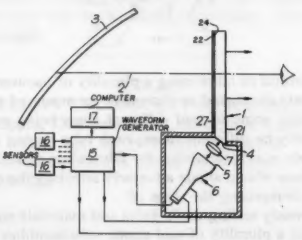
Simon M. St. Leger Searle, Cranham, England, assignor to Smiths Industries Limited, London, England

Filed Jan. 18, 1980, Ser. No. 113,163

Claims priority, application United Kingdom, Jan. 19, 1979, 01979/79

Int. Cl.³ G02B *5/32, 27/14*

U.S. Cl. 350—3.7 **11 Claims**



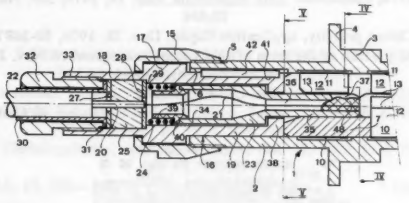
1. Display apparatus comprising: an optical element substantially of optically-transparent material, said optical element having a pair of opposite faces; display means directing light to one of said faces of said optical element, said one face reflecting a part at least of the light from said display means internally of said optical element to the other face of said optical element, said other face of said optical element reflecting a part at least of said light back to said one face to thereby produce successive internal reflections of said light within said optical element along said optical element; and a holographic element, said holographic element passing externally of said optical element a part of said light directed to the one or other face from successive internal reflections so that light from said display means emerges from the one or other face of said optical element via said holographic element at locations spaced along the optical element.

4,309,071

CONNECTOR FOR OPTICAL FIBERS AND DEVICE FOR MOUNTING FIBERS ON TIPS DIRECTLY USABLE ON CONNECTORS

Jean-Claude Prunier, Herblay, France, assignor to Souriau & Cie (SA), Bolouge-Billancourt, France

Filed Oct. 17, 1979, Ser. No. 85,917
Claims priority, application France, Oct. 23, 1978, 78 30104
Int. Cl.³ G02B *7/26*
U.S. Cl. 350—96.21 **13 Claims**



1. In combination, a pair of optical fiber mounting plugs, and a connector for optical fibers to connect the pair of optical fiber mounting plugs,

wherein each said plug comprises:

a plug body, elastic means therein, and retention means for said elastic means;

a tip including a barrel of non-circular cross-section having a longitudinal bore, said barrel having a slot opening into said bore;

at least one optical fiber contained within said bore and extending to the edge of said barrel, and means fixedly securing at least one said optical fiber to said barrel in said slot;

a sheath surrounding said optical fiber and a cable providing mechanical protection to said sheath in said plug body, said retention means holding said sheath in said plug body and including a pair of spaced washers and a stuffing body having a central bore disposed between said pair of washers, said sheath being retained in said central bore, said elastic means in response to movement thereagainst by said tip being urged against one of said washers, said plug body having an inner shoulder for locating said one washer in juxtaposition to said elastic means, and a ferrule crimped onto said cable retained against said other washer by said cable-clamping unit;

a cable-clamping nut screwed onto said plug body at one end thereof:

each said barrel including a hollow tip base which is traversed by said at least one optical fiber contained within said bore, said hollow tip base being received within said plug body at the other end thereof and said barrel being guided therein for axial movement and axially movable against said elastic means pressing thereagainst; and,

said connector includes:

a base body of generally regular shape, and an angle piece retained within said base body to control the positioning of said pair of said plugs in face to face relationship with each other so that the ends of each of at least one of said optical fibers retained by said fixing means in said barrel are brought in face to face abutting relationship.

4,309,072

CABLE PROTECTION FROM RODENTS

Andrew D. Tweeddale, Issaquah, Wash., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 15, 1980, Ser. No. 140,530
Int. Cl.³ G02B *5/16*; B32B *1/08*
U.S. Cl. 350—96.23 **1 Claim**

1. A cable protection for preventing damage to a buried fibre optic cable by gnawing rodents comprising, a fibre optic bundle for carrying a communication signal therethrough, a plastic inner jacket surrounding said optic bundle closely adjacent thereto, a circular plastic outer jacket positioned around and completely encircling said inner jacket closely adjacent thereto, and a plurality of pointed spikes extending radially

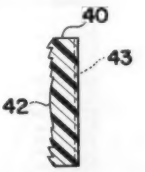
outward from the outer surface of said outer completely encircling jacket, said spikes being fabricated of plastic material to prevent the need for grounding, and to discourage rodents from gnawing and thereby causing damage to the buried cable, even from underneath.

4,309,073

TRANSLUCENT SCREEN ASSEMBLY

Itsuro Nishimura, Takatsuki, and Yoshimasa Takahashi, Nara, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Jan. 7, 1980, Ser. No. 110,187
Claims priority, application Japan, Jan. 17, 1979, 54-4043[U]
Int. Cl.³ G03B *21/60*
U.S. Cl. 350—128 **5 Claims**



1. A screen assembly comprising:

(a) a first layer consisting essentially of a translucent resin, having a first surface formed with a Fresnel lens and a second surface on the opposite side of said first layer from said first surface thereof;

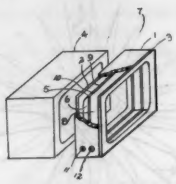
(b) a second layer comprising a resin mixed with a diffusion means, said second layer having a first surface which is integrally formed on the second surface of said first layer, wherein said first layer is thicker than said second layer;

(c) a third layer consisting essentially of a translucent resin, said third layer having a first surface which is integrally formed on a second surface of said second layer, said second surface of said second layer being on the opposite side of said second layer from said first surface thereof, and said third layer having a second surface on the opposite side of said third layer from said first surface thereof, said second surface of said third layer being polished.

4,309,074
VIEWING SCREEN

Michael S. Granieri, Jr., 1805 N. James St., Rome, N.Y. 13440

Continuation-in-part of Ser. No. 855,238, Nov. 28, 1977, abandoned. This application Aug. 22, 1979, Ser. No. 68,663
Int. Cl.[3] G02B *3/08, 3/12, 27/22*
U.S. Cl. 350—144 9 Claims



1. A novel viewing screen comprised of:

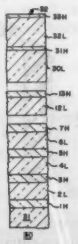
a boxed-rectangular hollow transparent housing having six enclosed sides with the front and back sides having the same cross sectional area as a two-dimensional image source to be viewed and easily aligned and adaptable to said image source;

a thin, flat, soft, flexible convex Fresnel type lens structure mounted and positioned adjacent and parallel between the front and back sides of the housing and dividing the housing into two chambers; means for supplying audio energy to set chambers to vibrate Fresnel lens structure at a frequency above the flicker frequency of the human eye to thereby give said two-dimensional image source the appearance of three-dimensions.

4,309,075
MULTILAYER MIRROR WITH MAXIMUM REFLECTANCE

Joseph H. Apfel, and Charles K. Carniglia, both of Santa Rosa, Calif., assignors to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Filed Oct. 5, 1979, Ser. No. 82,230
Int. Cl.[3] G02B *1/10*
U.S. Cl. 350—164 11 Claims

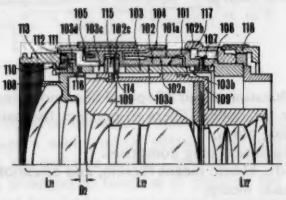


1. A multilayer mirror for reflecting radiation at a preselected wavelength comprising a substructure having a relatively high reflectance value and a pair of layers of different dielectric materials formed on said substructure to provide an increased reflectance value, one of the materials of the first and second of said layers on the side of incidence of said radiation being slightly absorbing and the other being free of absorption, the optical thickness of said first layer being less then one quarter of said preselected wavelength if said first layer is slightly absorbing or being more than one quarter of said preselected wavelength if said second layer is absorbing, the optical thicknesses of said first and second layers having first and second values chosen such that the overall reflectance of said mirror is substantially maximized at a value greater than the reflectance of a multilayer mirror in which the first two layers on the side of incidence of said radiation are formed on a substantially identical substructure and optical thickness values differing from said first and second values.

4,309,076
PHOTOGRAPHIC LENS ASSEMBLY

Masaharu Ito, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 844,839, Oct. 25, 1977, Pat. No. 4,175,831, which is a continuation of Ser. No. 644,318, Dec. 24, 1975, abandoned. This application Mar. 14, 1979, Ser. No. 20,404
Claims priority, application Japan, Dec. 28, 1974, 50-2497
The portion of the term of this patent subsequent to Nov. 27, 1996, has been disclaimed.
Int. Cl.[3] G02B *7/02*
U.S. Cl. 350—255 10 Claims



1. A lens assembly for use with a camera body, comprising:

(A) a lens system including at least first and second lens groups, said lens system having an optical axis, and said first and second lens groups being shiftable along the optical axis for focusing of the whole lens system;

(B) first cylindrical means adapted to be mounted onto the camera body;

(C) second cylindrical means having two shifting means with respective shift rates on the outer and inner surfaces respectively and first guide means with two surfaces respectively provided on two planes parallel with each other and perpendicular to the optical axis, said second cylindrical means being engaged with said first cylindrical means through the outer shifting means and movable along the optical axis relative to the first cylindrical means according to the shift rate of the outer shifting means by the rotation around the optical axis;

(D) third cylindrical means having second guide means with surfaces substantially parallel to the optical axis, said third cylindrical means being engaged with said second cylindrical means through the inner shifting means of the second cylindrical means and movable along the optical axis relative to the second cylindrical means according to the shift rate of the inner shifting means by the rotation of the second cylindrical means while being prevented from rotation by said first cylindrical means so that the third cylindrical means is moved along the optical axis relative to the first cylindrical means according to the combined shift rate of the outer and inner shifting means when the second cylindrical means is rotated around the optical axis;

said first lens group being fixedly connected with said third cylindrical means and shifted along the optical axis by the axial movement of the third cylindrical means when said second cylindrical means is rotated around the optical axis; and

(E) connecting means for connecting said second lens group with said second cylindrical means, said connecting means being fixedly connected with the second lens group and operatively engaged with both of said first guide means of the second cylindrical means and said second guide means of the third cylindrical means;

said second lens group being guided along the optical axis by said second guide means of the third cylindrical means and

shifted along the optical axis by the axial movement of said second cylindrical means throughout the operative engagement of said connecting means with said first guide means of the second cylindrical means when the second cylindrical means is rotated around the optical axis;

so that when the second cylindrical means is rotated about the optical axis, the first lens group is shifted along the optical axis according to the combined shift rate of the outer and inner shifting means while the second lens group is shifted along the optical axis according to the shift rate of the outer shifting means.

4,309,077

LENS BARREL CAPABLE OF AUTOMATIC AND MANUAL FOCALIZING OPERATIONS

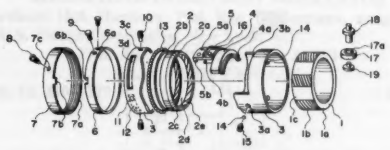
Yasumasa Tomori, Sakado, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 10, 1979, Ser. No. 102,283

Claims priority, application Japan, Jan. 18, 1979, 54-4718[U]

Int. Cl.³ G02B *7/04*

U.S. Cl. 350—255 **7 Claims**



1. A lens barrel comprising:

a drive force transferring rotary member (17) for transferring a focalizing operational force from a camera body;

a driven member (4) rotationally driven by said transferring rotary member and having a first edge running in a circumferential direction;

a holding member fixed to said driven member and having a second edge running in a circumferential direction and offset along an optical axis of said lens barrel with respect to said first edge;

a rotary cylinder having first and second grooves each running in a circumferential direction and spaced apart along said optical axis, said first and second grooves being engaged by said first and second edges, respectively, whereby said rotary cylinder is rotated by said transferring rotary member through said driven and holding members;

an engaging ring fixed to said holding member; a manually rotatable operating ring movable along said optical axis between first and second positions; and

coupling means provided between said engaging ring and said operating ring for rotationally coupling said operating and engaging rings in the first position of said operating ring whereby rotation of said operating ring will rotate said rotary cylinder, and rotationally decoupling said operating and engaging rings in the second position of said operating ring whereby said rotary cylinder will rotate in response to rotation of said transferring rotary member but will not rotate in response to rotation of said operating ring.

4,309,078

PENTAGONAL PRISM FOR CAMERA VIEWFINDER

Kyoichi Hara, Kawanishi; Yasuo Yamazaki, Kawachinagano, and Takeshi Egawa, Osaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

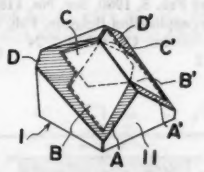
Filed May 7, 1980, Ser. No. 147,532

Claims priority, application Japan, May 15, 1979, 54-59989

Int. Cl.³ G02B *5/04*; C03C *3/10, 3/30*

U.S. Cl. 350—286 **7 Claims**

1. A pentagonal prism for use in a camera viewfinder, said prism being made of a glass whose refractive index and Abbe number are not less than 1.6 and 45 respectively, and said prism comprising a pair of roof surfaces which have their effective optical regions left transparent, whereby viewfinder light



travelling through said prism can be totally reflected at both of said roof surfaces, wherein said glass is of the following composition in weight %:

SiO_2	40 to 44%
B_2O_3	3 to 5%
Li_2O	1 to 3%
CaO	5 to 10%
BaO + SrO	15 to 18%
wherein BaO	12 to 18%
SrO	0 to 7%
ZnO	10 to 17%
ZnO_2	4 to 6%
TiO_2	0.5 to 4%
$Na_2O + K_2O$	0 to 3%
MgO	0 to 3%
PbO	0 to 3%
$Sb_2O_3 + As_2O_3$	0 to 1%

4,309,079

ALL-DAY, ALL-YEAR SOLAR CONCENTRATOR

Beecher J. Holland, 600 Morison Ave., Kingsport, Tenn. 37660

Continuation-in-part of Ser. No. 101,175, Dec. 7, 1979, abandoned, which is a continuation-in-part of Ser. No. 822, Jan. 4, 1979, abandoned, which is a continuation-in-part of Ser. No. 910,119, May 30, 1978, abandoned. This application Aug. 11, 1980, Ser. No. 177,107

Int. Cl.³ G02B *5/10*

U.S. Cl. 350—292 **3 Claims**

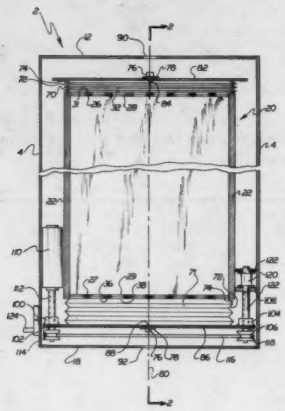
1. A solar radiation concentrator comprising a plurality of generally cone-shaped concave solar collectors arranged in a convex circular array extending nearly a semicircle for receiving solar radiation throughout the day, said array being rotatable through 180 degrees about the diameter defining said semicircle, and each said collector being slightly tilted out of the plane of said semicircle, whereby seasonal adjustment of said array may be achieved by rotating said array through 180 degrees twice a year.

4,309,080

VARIABLE FLUID MEDIA RADIATION FILTER

Jean-Pierre Hanchard, 7, rue Rivelaine, B1428, Lillois, and Charles Servais, 24 rue Forgeur, 400, Liege, both of Belgium

Filed Feb. 5, 1980, Ser. No. 118,734
Claims priority, application Belgium, Feb. 6, 1979, 193295
Int. Cl.[3] G02B 5/24
U.S. Cl. 350—312 16 Claims



1. A variable fluid media radiation filter apparatus comprising:

a pair of opposing, spaced, radiation transmissive members, said members having opposing edge portions, and first and second opposing ends, said first end being elevated with respect to said second end;

sealing means sealing said opposing edge portions, said opposing members and said sealing means defining a cavity;

first and second bellows means being compressible and expandable so as to have variable volumes;

fluid transmission means at each of said first and second opposite ends of said members interconnecting said first and second bellows means with said first and second opposite ends, respectively, said fluid transmission means rendering said first and second bellows in communication with said cavity, said first and second bellows, said transmission means and said cavity defining a closed volume;

a plurality of immiscible fluids of different specific gravities and radiation transmission characteristics, said fluids filling said closed volume, the fluids within said cavity and said radiation transmissive members forming a radiation filter; and

bellows actuating means for selectively compressing one of said first and second bellows means and expanding the other of said bellows means to force a portion of said fluids into and out of said cavity, to vary the filtering effect of said radiation filter on radiation incident on said filter.

4,309,081

DISPLAY DEVICES

Irfan Camlibel, Stirling; Shobha Singh, Summit; LeGrand G. Van Uitert, Morristown, and George J. Zydzik, Warren County, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 29, 1979, Ser. No. 43,167
Int. Cl.[3] G02F 1/17, 1/23
U.S. Cl. 350—357 26 Claims

1. An electrochemical display device comprising

(a) positive and negative electrodes

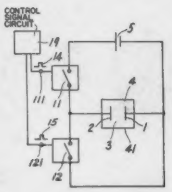
(b) electrochemical solution comprising organic solvent with pKa greater than 9, active species which change color under the influence of an electrical signal and electrolyte consisting essentially of ammonium halide characterized in that the active species comprises organic quinone selected from the group consisting of benzoquinone, naphthaquinone, anthraquinone, benzanthrenequinone, diphenylquinone, dibenzanthraquinone, phenanthrenequinones, benz[α]anthracene-7,12dione, ethylanthraquinone, tertiarybutylanthraquinone, isoviolanthrone, pyrenequinone, perylenequinone, chrysenequinone, benzpyrenequinone, pyranthrone, flavanthrone and anthanthrone.

4,309,082

ELECTROCHROMIC DISPLAY APPARATUS

Rikusei Kohara, Ibaraki; Yoshihisa Komoto, Settsu, and Seizo Nakajima, Takatsuki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 811,882, Jun. 30, 1977, abandoned.
This application Nov. 5, 1979, Ser. No. 90,919
Claims priority, application Japan, Jul. 12, 1976, 51-83144; Jul. 13, 1976, 51-83647
Int. Cl.[3] G02F 1/17
U.S. Cl. 350—357 9 Claims



1. An electrochromic display apparatus comprising:

(a) a display cell having an indication electrode, a polarizable counter-electrode and an electrochemical electrochromic substance filled between said indication electrode and said counterelectrode,

(b) a voltage-impressing means for impressing a predetermined voltage across said indication electrode and said counter-electrode for a predetermined time period to allow a current to flow across the electrodes to form an electrochromic reaction product for electrochromic indication on the surface of said indication electrode, and

(c) a shortcircuiting means which, each time before applying said predetermined voltage, shortcircuits said indication electrode and said counter-electrode to each other for a predetermined time period to provide an inverse current to said current across the electrodes to dissolve said electrochemical reaction product and thereby erase said electrochromic indication.

4,309,083

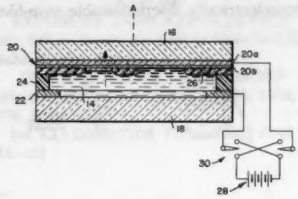
ELECTRODE FOR AN ELECTROLYTIC CELL PARTICULARLY FOR ELECTROLYTIC DISPLAY CELLS AND PROCESS OF MANUFACTURE

Jacques Duchene, Grenoble, and Robert Meyer, Gieres, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Division of Ser. No. 956,646, Nov. 1, 1978. This application Dec. 11, 1979, Ser. No. 102,363
Claims priority, application France, Nov. 1, 1977, 77 33383
Int. Cl.[3] G02F 1/29
U.S. Cl. 350—357 5 Claims

1. A transparent electrode for an electrolytic display cell comprising a first transparent conducting oxide layer having a configuration suitable for display purposes and deposited on an electrically insulating transparent support, the first transparent conducting oxide layer, being coated with a thin transparent second conducting layer of an oxide which differs from that of the first layer and which makes it possible under the operating

conditions of the cell to limit the overvoltage on the electrode the optical transmission and the electrical conduction characteristics of the electrode being slightly reduced with respect to those of the first layer.

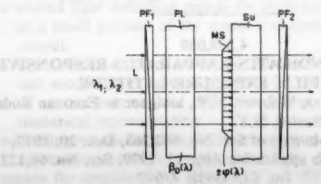


4,309,084

MAGNETO-OPTICAL LIGHT MODULATOR

Bernhard Hill, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 19, 1979, Ser. No. 31,571
Int. Cl.³ G02F 1/09, 1/25
U.S. Cl. 350—377 3 Claims



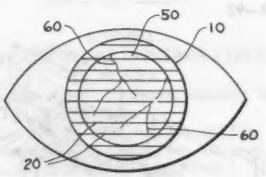
1. A magneto-optical light modulator comprising: a light source for producing a light beam of two colors, a polarizer, an analyzer, a substrate, said substrate supporting on a first side thereof a first Faraday rotation layer, said first Faraday rotation layer being positioned between said polarizer and said analyzer and having a first plurality of modulation elements, electronic means for switching the magnetization state of selected modulation elements of said first plurality, which modulation elements undergo a Faraday effect dependent on their magnetization state, by which effect the polarization plane of said light beam produced by said light source and transmitted through said Faraday rotation layer is rotated, an optical dispersive element for rotating the plane of polarization of said light from said polarizer depending upon the wavelength of said two colours, said first Faraday rotation layer having a modulation characteristic so as to enable each modulation element in combination with the polarizer and analyzer to transmit or to block either of the two colours produced by said light source, and a second Faraday rotation layer having a second plurality of modulation elements supported on a side of said substrate opposite said first side, said second Faraday layer having a geometry and being position so that the plane of polarization of said light beam passing through a modulation element of said first plurality can be rotated independently by a modulation element of said second plurality and wherein the operating points of the modulation characteristic are arranged so that for a first switching position of the modulation elements of said first and second plurality substantially only light of one colour is transmitted and for a second switching position substantially only light of the second colour is transmitted and for a third switching position both light colours are substantially switched-off.

4,309,085

METHOD FOR MEASURING EYE FEATURES WITH A CONTACT LENS

Robert J. Morrison, Green and Division Sts., Harrisburg, Pa. 17110

Filed Jul. 12, 1979, Ser. No. 57,040
Int. Cl.³ A61B 3/10, 5/10; G02C 7/04
U.S. Cl. 351—39 3 Claims



1. The method of measuring features of the eye comprising forming a soft contact lens having measuring indicia thereon,

repeatedly placing said soft contact lens on the eye and in intimate engagement therewith, said lens overlying a changeable feature of the eye to be measured, and

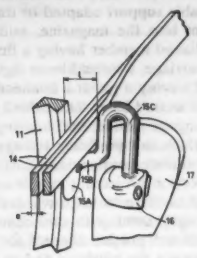
measuring said feature by means of said indicia each time the soft contact lens is placed on the eye.

4,309,086

NOSE PLATE HOLDER SPECTACLE FRAMES

Bernard Lhospice, Blois, France, assignor to Essilor International, Creteil, France

Filed Feb. 6, 1980, Ser. No. 118,986
Claims priority, application France, Feb. 22, 1979, 79 04528
Int. Cl.³ G02C 5/14, 5/02, 5/00
U.S. Cl. 351—140 3 Claims



1. A nose plate holder for a spectacle frame comprising a face structure and two hinged frame side members, said nose plate holder comprising:

a fixing tab attached to the face structure;

an upright member extending substantially perpendicularly to the face structure over a length at least equal to the thickness of each frame side member, said upright member being integrally extended by a substantially U-shaped bow portion having its open end directed toward the lower position of said face structure;

a plate attaching member supported by the free end of said bow portion, said nose plate holder defining between said bow portion and the face structure of the spectacle frame a space adapted to receive and maintain temporarily said side members in a folded position wherein they are naturally superimposed against the face structure.

4,309,087

SLIDE MAGAZINE PROJECTOR

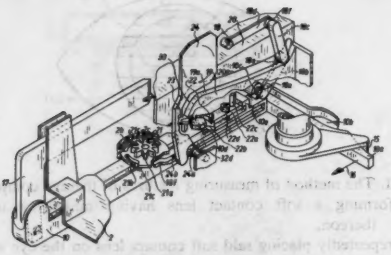
Jürgen Sylla, and Gerrit Pahl, both of Munich, Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Fed. Rep. of Germany

Filed May 19, 1980, Ser. No. 151,107

Claims priority, application Fed. Rep. of Germany, May 22, 1979, 2920777

Int. Cl.³ G03B *23/04*

U.S. Cl. 353—92 8 Claims



1. A slide magazine projector of the type having an objective lenses and a projecting lamp comprising a housing with a plurality of walls and with a compartment to receive a magazine with slides adapted for slidable movement in the housing; a platform for receiving a slide from the magazine positioned between the objective lenses and the lamp; drive means for shifting the magazine within the housing; means for arresting the magazine when the latter is in alignment with said platform; a slide carriage adapted for slidable movement within said housing in two opposite directions which are normal to that of the slidable movement of the magazine; a partition arranged in said housing for moving into and from a position in the path of projecting light; and means for placing a slide onto said platform; and means for returning the slide into the magazine, said placing means including a first support rigidly mounted on said carriage and adapted to transport slides from the magazine onto said platform, said returning means including a second movable support adapted to transport the slides from said platform into the magazine, said second support including a three-linked member having a first lever pivotally mounted on said carriage, a second lever rigidly connected to said first lever and having a pin at a connection between said first lever and said second lever and a third lever terminated with a pusher to engage a slide, said housing being provided with a cammed surface, said pin being arranged in engagement with said cammed surface, said cammed surface being formed with an inclined portion projecting in a downward direction, whereby when said carriage moves towards the magazine said pin is moved in engagement with said cammed surface and then with said inclined portion thereof for permitting said pusher to move toward the platform and to transport a used slide from said platform to the magazine and for preventing a further movement of said pusher towards the magazine after the used slide has been returned into the magazine.

4,309,088

FILM MAGAZINE HAVING AN IDENTITY MARK FOR IDENTIFYING SENSITIVITY OF THE FILM AND A CAMERA THEREFOR

Yasuo Uchida; Michio Yagi, and Kazuo Shiozawa, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jul. 20, 1979, Ser. No. 59,133

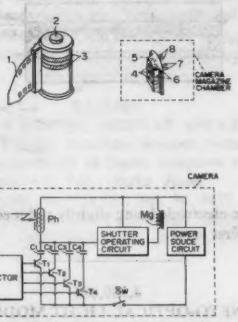
Claims priority, application Japan, Jul. 24, 1978, 53/89386

Int. Cl.³ G03B *17/24*

U.S. Cl. 354—21 2 Claims

1. In a photographic camera having a shutter operating circuit automatically adjustable in accordance with the sensitivity of photographic film contained within a film magazine inserted into the camera,

a magazine chamber for accommodating a film magazine having a peripheral surface on which is provided at least one photoelectrically discriminatable strip-like mark in-



dicative of the sensitivity of film contained within the magazine, and

photoelectric discriminating means located in the camera for discriminatably reading said at least one strip-like mark on a film magazine placed in said magazine chamber.

4,309,089

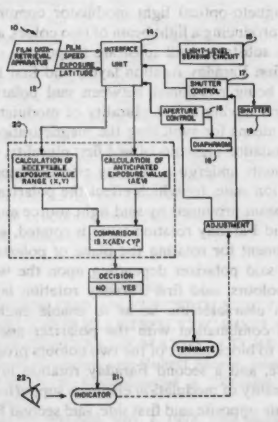
EXPOSURE INDICATING APPARATUS RESPONSIVE TO FILM EXPOSURE LATITUDE

Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 862,263, Dec. 20, 1977, abandoned. This application Aug. 13, 1979, Ser. No. 66,122

Int. Cl.³ G03B *7/097*

U.S. Cl. 354—23 D 7 Claims



1. In a camera having means for setting an exposure control mechanism, and means for indicating the suitability of the exposure control setting to effect a proper film exposure, the improvement comprising:

a. means settable in accordance with the exposure latitude, including an overexposure latitude and an underexposure latitude, of the film received in the camera; and

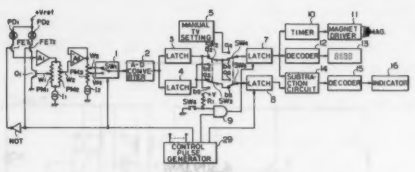
b. digital electronic computer means receiving input from said exposure control mechanism setting means and input from said film exposure latitude settable means for causing said indicating means to indicate the adequacy of the

exposure control mechanism setting to effect an exposure which is within said film exposure latitude.

4,309,090
EXPOSURE INDICATING DEVICE

Seiji Yamada, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 27, 1979, Ser. No. 69,853
Claims priority, application Japan, Aug. 31, 1978, 53-107353; Sep. 14, 1978, 53-113152
Int. Cl.³ G03B *7/08, 17/18;* G01J *1/42*
U.S. Cl. 354—31 **17 Claims**



1. An exposure indicating device for a photographic camera comprising:

a first light detecting means for detecting the light level of a substantial portion of a scene to be photographed and generating a first output;

a second light detecting means for detecting the brightness at a small portion of the scene and generating a second output;

a first indicator means selectably connectable to said first and second light detecting means for indicating said first or second output, said indication being in the form of a numerical representation;

switching means for selectively connecting said first indicator means to said first and second light detecting means;

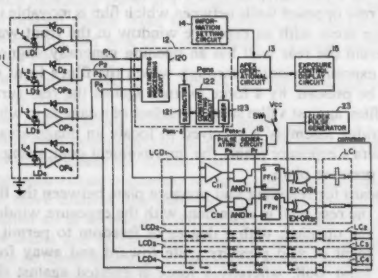
means for detecting the amount of the difference between said first and second outputs; and

a second indicator means for indicating the amount of the difference.

4,309,091
EXPOSURE DISPLAY DEVICE IN A CAMERA

Toru Fukuhara, Isehara, and Takashi Saegusa, Sagamihara, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed May 9, 1980, Ser. No. 148,211
Claims priority, application Japan, May 30, 1979, 54/71765[U]
Int. Cl.³ G03B *7/28, 17/20*
U.S. Cl. 354—31 **8 Claims**



1. An exposure display device for a camera including metering means for effecting metering while dividing a phototaking picture plane into a plurality of areas and for emitting a plurality of photoelectric conversion signals corresponding to said areas, and processing means for operating and emitting a proper exposure signal from the output signals of said metering means, said exposure display device comprising:

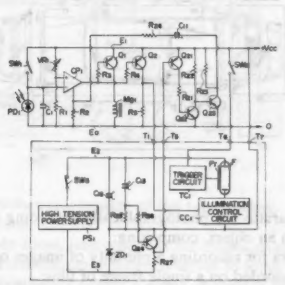
comparing means for comparing respectively said plurality of photoelectric conversion signals with said proper exposure signal and emitting a plurality of the results of said comparison corresponding to the conversion signals; and

display means for displaying said comparison signals in correspondence to said divided areas.

4,309,092
AUTOMATIC EXPOSURE CONTROL CIRCUIT FOR CAMERA

Masahiro Kitagawa, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 23, 1981, Ser. No. 227,773
Claims priority, application Japan, Apr. 30, 1980, 55-58114
Int. Cl.³ G03B *7/081, 15/05*
U.S. Cl. 354—33 **7 Claims**

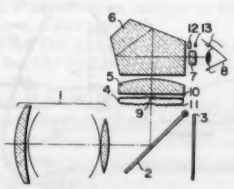


1. An automatic exposure control circuit for a camera having the capability to control the amount of light emitted by a flash discharge tube of an electronic flash; characterized by the provision of bias current booster means for increasing the speed of response of said control circuit as the flash discharge tube begins to emit light.

4,309,093
CAMERA HAVING A DIFFUSING PLATE WITH ROTATIONALLY ASYMMETRIC LIGHT DIFFUSION PROPERTY

Tetsuro Kuwayama; Takashi Suzuki, and Kazuya Matsumoto, all of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 971,432, Dec. 20, 1978, abandoned. This application Apr. 10, 1980, Ser. No. 138,984
Claims priority, application Japan, Dec. 28, 1977, 52-160126
Int. Cl.³ G03B *7/00, 13/02*
U.S. Cl. 354—59 **10 Claims**



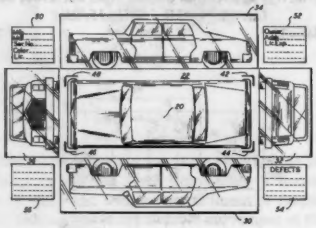
1. A camera having a diffusing plate with a rotationally asymmetric light diffusion property comprising;

an imaging lens forming a first optical path,

a finder optical system forming a second optical path,

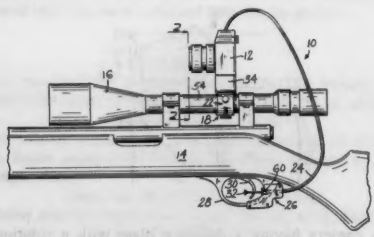
a photosensitive member positioned at a focal plane in said first optical path,
a diffusing plate positioned at a focal plane in said second optical path and having a rotationally asymmetric angular distribution property,
a photo detecting means positioned out of the optical axis of said second optical path, and
an exposure control means.

4,309,094
MULTI-ANGLE PHOTOGRAPHY
Paul C. Bollen, 1491 Union Center Hwy., Endicott, N.Y. 13760
Filed Dec. 1, 1980, Ser. No. 211,710
Int. Cl.[3] G03B *15/06, 17/24, 29/00*
U.S. Cl. 354—80 7 Claims



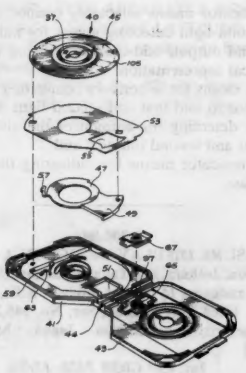
1. Apparatus for photographically recording a plurality of images on an object, comprising:
a camera for recording a plurality of images of an object to be recorded on a single frame of film;
a surface for supporting an object to be photographed, said surface being in direct view of said camara along a common axis therewith; and
a plurality of plane mirrors mounted at a predetermined angle to said surface to reflect views of said object to said camera within the field of view of said camera so that a direct view and a plurality of reflected views of said object may be recorded on film, there being one plane mirror for each reflected view of said object to be recorded on film, wherein one or more of said plane mirrors are readily removable to permit access to said surface by said object to be recorded.

4,309,095
CAMERA MOUNTING DEVICE
Frederick P. Buckley, 62 Maple St., West Boylston, Mass. 01583
Filed Nov. 3, 1980, Ser. No. 203,720
Int. Cl.[3] G03B *29/00*
U.S. Cl. 354—81 10 Claims



1. A camera mounting device comprising,
a first mounting bracket adapted to support a camera,
means for detachably securing a camera to said first mounting bracket,
means for detachably securing said first mounting bracket to the telescopic scope of a rifle,
a cable release means adapted for connection to a camera and having an actuation member,
a second mounting bracket for connection to said cable release means,
means for connecting said cable release means to said second mounting bracket and
means for detachably securing said second mounting bracket to a rifle.

4,309,096
FILM CARTRIDGE ASSEMBLY WITH PRESSURE PLATE
Gurdip S. Sethi, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Continuation-in-part of Ser. No. 106,630, Dec. 26, 1979, abandoned. This application Jun. 23, 1980, Ser. No. 161,792
Int. Cl.[3] G03B *1/48*
U.S. Cl. 354—121 12 Claims



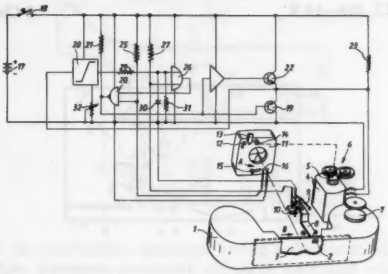
1. In a photographic film cartridge assembly having front and rear opposed walls between which film is movable to align image areas with an exposure window in the front wall, and wherein the rear wall has an opening generally aligned with the exposure window through which the film's front surface can be pressed, by a force exerted against the rear surface of the film, against a film support surface of a camera in which the cartridge assembly is received to locate an image area in the camera's exposure plane; the improvement comprising:
a pressure plate;
means for retaining said pressure plate between the film and the rear wall in alignment with the exposure window and the opening, with a degree of freedom to permit movement of said pressure plate toward and away from the front wall, whereby a force is exerted against the rear surface of the film when said pressure plate is moved toward the front wall; and
baffle means on said pressure plate and the rear wall for forming a tortuous light path to prevent light which enters said cartridge assembly through the opening from reaching the film.

4,309,097

STILL-CAMERA FILM TRANSPORT SYSTEM WITH MOTOR DEENERGIZATION AT END OF FILM

Otto Stemme, Munich; Peter Lermann, Narring; Karl Wagner, Munich; Dieter Engelsmann, Unterhaching, and Rolf Schröder, Baldham, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 955,475, Oct. 26, 1978, abandoned.
This application Dec. 18, 1979, Ser. No. 104,900
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1977, 2748557
Int. Cl.[3] G03B *1/00*
U.S. Cl. 354—173 5 Claims



1. A film transport system for use in a still camera which utilizes film in cassette format and a shutter with a set state and an unset state, when the film is perforated at regular intervals with perforations and when each such perforation is associated with a corresponding individual film frame to enable each frame to be aligned with the shutter, comprising:

a drive motor mechanically connected to the film and the shutter and urging the film to advance and urging the shutter to adopt the set state from its unset state after the motor is energized, the drive motor operating in a manner that after such energization, the drive motor will normally reach operating speed in a predetermined period of time;

a perforation sensor fixed to the camera and detecting a perforation and lack of a perforation at a fixed location along a film path;

a shutter sensor fixed to the camera and responsive to state of the shutter;

a drive control means responsive to motor speed;

a switch means connected to the drive motor and energizing and deenergizing the motor; and

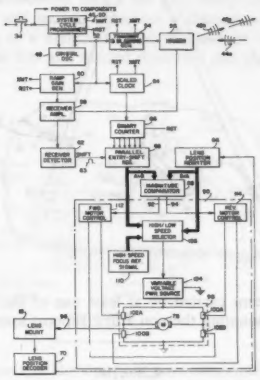
a supervisor circuit connected to the sensors, the switch and the drive control, the supervisor circuit operating in a manner so as to energize the motor to advance the film one frame and to cause the shutter to adopt its set state from its unset state and to deenergize the motor after the film has so advanced and after the shutter has so adopted its set state, the supervisor circuit further operating in a manner that in the event the drive motor has been energized for said predetermined period of time and has failed to reach operating speed within said predetermined period of time, the drive motor will be deenergized.

4,309,098

AUTOFOCUS CINE CAMERA HAVING AUTOMATIC VARIABLE SPEED FOCUSING

Edwin K. Shenk, Westford, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 965,405, Dec. 1, 1978, abandoned. This application Apr. 7, 1980, Ser. No. 137,635
Int. Cl.[3] G03B *3/10*
U.S. Cl. 354—195 14 Claims



1. In an autofocusing camera of the type having,

an image plane,

an adjustable focus lens mounted for displacement over a given operational range where it serves to focus images of subjects positioned within a range of subject distances at said image plane,

an ultrasonic rangefinder for deriving a subject distance signal representative of the distance to a particular subject within said range of subject distances, the improvement comprising:

energizable drive means responsive to said subject distance signal for displacing said lens at one rate in a particular direction if the magnitude of lens displacement necessary to focus an image of said particular subject at said image plane is greater than one-eighth of the entire focusing range of said adjustable focus lens and at another rate in said same particular direction if said necessary lens displacement magnitude is equal to or less than said one-eighth of the entire focusing range of said adjustable focus lens.

4,309,099

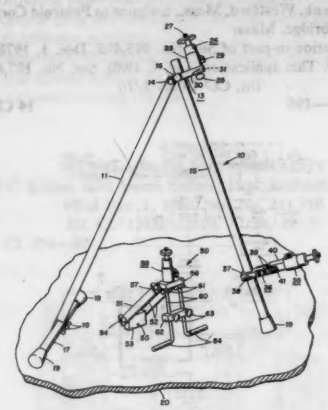
ADJUSTABLE APEX CAMERA SYSTEM

Gene A. Flint, Waterloo, Iowa, assignor to Fred G. Clark, Jr., Waterloo, Iowa, a part interest

Filed Oct. 9, 1980, Ser. No. 195,676
Int. Cl.[3] F16M *11/08*; G03B *17/56*
U.S. Cl. 354—293 15 Claims

1. A device of the class described comprising: first and second longitudinally extensive base legs having opposite ends and a pivotal interconnection located thereon for scissors-like movement of the base legs with respect to each other; a transverse base member affixed to one end of one of the base legs and extending laterally from opposite sides of said base leg, the outer ends of the base member and one end of the other base leg constituting feet effective to engage an underlying basis and render the device self-supporting in a generally upright position thereon, whereby the other ends of the base legs

constitute their upper ends, said pivotal location being adjustable longitudinally of at least one of the base legs; and first



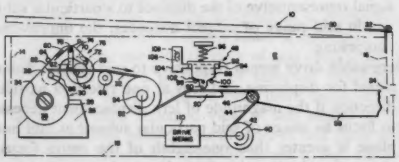
mounting means carried by at least one of the base legs for removably mounting thereon a first support assembly.

4,309,100

FILM PROCESSOR FOR INSTANT TYPE TRANSPARENCY FILM

Leonard V. Bendoni, Framingham, and Richard R. Wareham, Marblehead, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 17, 1980, Ser. No. 207,686
Int. Cl.³ G03D *5/06*
U.S. Cl. 354—303 **5 Claims**



1. Apparatus for receiving a film cassette containing a roll of exposed, self-developing type transparency film preparatory to processing the film, the roll of film being wound upon a spool and having one end thereof secured to the spool and an opposite end extending to the exterior of the film cassette via a film withdrawal slot, said apparatus comprising:

a housing defining a lighttight enclosure in which photographically exposed film is adapted to be processed, said housing including means defining an opening through which the film is adapted to be moved subsequent to processing, and means defining a loading door providing access to the interior of said housing;

first means for supporting a film cassette containing a roll of exposed, self-developing type transparency film;

second means for supporting a supply of sheet material;

means for withdrawing the sheet material and the exposed film from said second supporting means and the film cassette and orienting them in superposition;

first drive means for driving said withdrawing means in a direction so as to superpose the sheet material and the exposed film upon said withdrawing means;

means for applying a coating of processing composition to one side of either the sheet material or the film prior to said superpositioning, the processing composition being adapted to initiate the formation of visible images in either the film or the sheet material;

means for separating the film from its attachment to the spool within the cassette;

second drive means operative to drive said second support means in a direction to remove the superposed sheet material and film from said withdrawing means; and

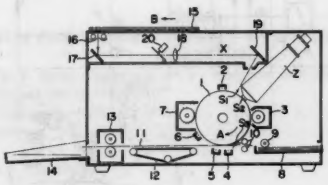
means for stripping the film from the sheet material and guiding the film through said opening.

4,309,101

SYSTEM FOR CONTROLLING APPARATUS FOR COMPOSITE-RECORDING INFORMATION

Hiroya Nakamura, Kunitachi, and Hiromi Taguchi, Hachioji, both of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jul. 23, 1979, Ser. No. 59,618
Claims priority, application Japan, Jul. 26, 1978, 53-91287; Aug. 18, 1978, 53-100010
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R **2 Claims**



1. In an apparatus for composite-recording information comprising a copy board, a photosensitive member, an optical system operable in a copying mode for forming an image corresponding to an original placed on the copy board onto the photosensitive member thereby to form an electrostatic latent image of the original, reproducing device operable in a recording mode for scanning and reproducing electric information signals on the photosensitive member in the form of an electrostatic latent image, and a developing device for developing the electrostatic latent image on the photosensitive member in a visualized form, a control system for controlling the apparatus for composite-recording information, said control system comprising means for providing a command signal and a computer responsive to said command signal, said computer being responsive to a command signal indicative of a request for recording electric information signals while the electrostatic latent image is being formed on the photosensitive member by means of the optical system, for forming an electrostatic latent image of electric information signals after one page of electrostatic latent image has been formed, said computer including discrimination means whereby when a command signal of recording is introduced to said computer, (a) discrimination is carried out in regard to whether the command signal is to effect copying of the original or recording of first electric information signals, (b) when it is so discriminated that the command signal is to copy the original, the electrostatic latent image of one page of the original is formed on the photosensitive member and is transferred onto a recording paper according to a copying cycle, (c) when it is so discriminated that the command signal is to record the electric information signals, the electrostatic latent image of one page of the electric information signals is formed on the photosensitive member and is transferred onto the recording paper according to a recording cycle, (d) and after one page of the electrostatic latent image has been formed on the photosensitive member, the discrimination is effected as to whether there is a request for recording the second electric information signals, (e) wherein when it is so discriminated that there is a request for such recording, the procedure is returned to the recording cycle to record the second electric information signals, (f) and when it is so discriminated that there is no request for such recording, the

discrimination is then carried out in regard to whether the continuous copying operation should be carried out or not, (g) and when it is so discriminated that the continuous copying operation should be carried out, the procedure is returned to the copying cycle to carry out the copying operation.

4,309,102

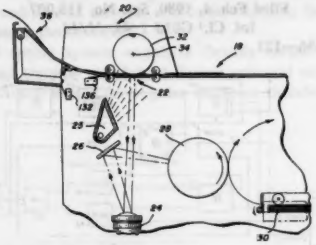
ORIGINAL DOCUMENT HANDLER

Arthur A. Pudark, Downers Grove; George P. Niesen, Mt. Prospect; Frederick O. Bach, Elmhurst, and Mahendra B. Shukla, Glenview, all of Ill., assignors to A. B. Dick Company, Chicago, Ill.

Filed Oct. 22, 1979, Ser. No. 87,212

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 SH **8 Claims**



1. In combination, apparatus having a document viewing station, document processing apparatus associated with the document viewing station, and document feeding means for advancing a document past the viewing station, the improvement comprising:

(a) a carrier rotatably mounted adjacent said viewing station for advancing a document past the viewing station;

(b) a transparent document holder carried by said carrier for releasably securing a document adjacent the periphery of said carrier, said document holder having one end non-releasably secured to said carrier and an opposite end releasably secured to said carrier;

(c) control means including a timing means coupled to said carrier for producing timing signals in synchronized relationship with advancement of the document past said viewing station for controlling operation of the document processing apparatus including additional means for advancing a document past the viewing station, comprising:

(d) means for receiving and advancing the document intermediately of the carrier and the viewing station, and

(e) sensing means responsive to the presence of a document in said additional means and operable in combination with said control means to advance the document past the viewing station in synchronized relationship with the rotation of the carrier and the operation of said copying apparatus.

4,309,103

DEVICE FOR CONTACT-FREE THICKNESS OR INTERVAL MEASUREMENT

Viktor Bodlaj, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 18, 1980, Ser. No. 113,329

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1979, 2904833

Int. Cl.³ G01C *3/00, 5/00, 3/08*

U.S. Cl. 356—1 **4 Claims**

1. A device for contact-free thickness or interval measurement, comprising:

light source means for generating a sharply concentrated light ray beam in a prescribed direction;

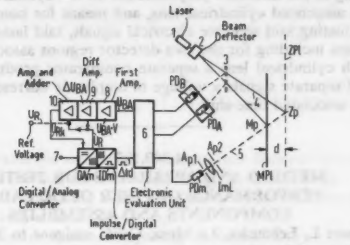
a beam deflector means for periodic deflection of the light ray beam at right angles to the prescribed direction;

a beam divider positioned after the beam deflector;

a first and second light-sensitive detector at a region of a light ray beam divided out from the prescribed direction by the beam divider, the first and second detectors having an optical axis receiving light from a specific direction;

at least one third light-sensitive detector whose optical axis intersects the light ray beam at a reference plane;

electronic evaluation means for generating from signals of the first and second detectors a control voltage corresponding to a deflection time of the light ray beam between the first and second detectors and also generating



from signals of the first and third detectors at least one voltage impulse which is a measure of an interval of a surface of a measured object from the reference plane;

an impulse/digital converter to which the voltage impulse is supplied;

means for creating a reference voltage;

means for generating a corrected reference voltage by changing the reference voltage in a direction opposite to a deviation of the control voltage from a normal operating voltage; and

a digital/analog converter means for creating an analog output based upon the corrected reference voltage and digital output from the impulse/digital converter.

4,309,104

AIRCRAFT VELOCITY-ALTITUDE MEASURING MEANS

Reinhard Prinz, Aalen, and Karl Felle, Oberkochen, both of Fed. Rep. of Germany, assignors to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

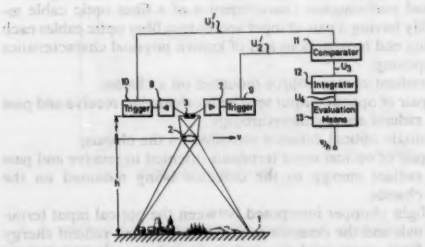
Continuation of Ser. No. 17,029, Mar. 2, 1979, abandoned, which is a continuation of Ser. No. 811,825, Jun. 30, 1977, abandoned.

This application Sep. 29, 1980, Ser. No. 191,368

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1976, 2636769

Int. Cl.³ G01P *3/36*; G01C *3/08*

U.S. Cl. 356—28 **10 Claims**



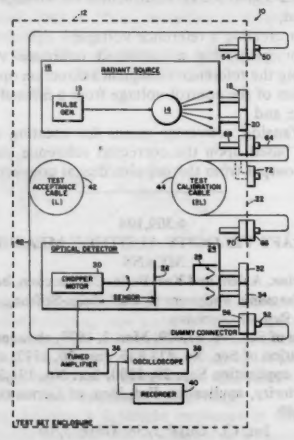
1. An aircraft velocity/altitude measuring device, comprising two terrain-viewing cylindrical lenses disposed for direct

viewing of terrain and fixedly related to each other in an orientation such that their cylinder axes are generally transverse to but at an angle extending on opposite sides of the aircraft axis, said angle being large enough to embrace the direction of the flight-velocity vector for the widest possible extent of drift-angle heading of the aircraft, whereby passing terrain features are converted by said lenses into line structures having said fixed angle relation and moving in the image planes of the respective cylindrical lenses, means including two spaced light-sensitive detector regions in the image plane of each cylindrical lens for producing separate time-varying electrical signals the time-shift between which is respectively proportional to the speed of movement of the line structures in the respective image planes of said cylindrical lenses, said spacing being in the direction perpendicular to the cylindrical axis of the associated cylindrical lens, and means for comparatively evaluating said separate electrical signals, said last-mentioned means including for the two detector regions associated with each cylindrical lens a separate comparator producing from said separate signals a voltage of amplitude corresponding to the associated time-shift.

4,309,105
METHOD AND APPARATUS FOR TESTING PERFORMANCE OF FIBER OPTIC CABLE COMPONENTS AND ASSEMBLIES

Robert L. Lebduska, La Mesa, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 3, 1980, Ser. No. 126,498
Int. Cl.[3] G01N *21/84, 21/88, 21/59*
U.S. Cl. 356—73.1 4 Claims



1. An apparatus for the long term, continuous testing of the optical performance characteristics of a fiber optic cable assembly having a pair of input and output fiber optic cables each having end terminations and of known physical characteristics comprising:

a radiant energy source mounted on a chassis;

a pair of optical output terminals oriented to receive and pass radiant energy therethrough;

a single optical detector mounted on the chassis;

a pair of optical input terminals oriented to receive and pass radiant energy to the detector being mounted on the chassis;

a light chopper interposed between the optical input terminals and the detector to selectively permit radiant energy from one optical terminal or the other to the detector;

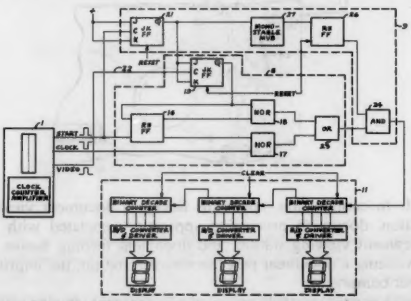
a standardization cable having the same optical and physical characteristics as the input and output cables, said standardization cable having optically acceptable end terminations coupled between one optical output terminal and one optical input terminal, the other optical output terminal and the other optical input terminal having the fiber optic cable assembly coupled therebetween; and

means coupled to the single optical detector for comparing the respective output radiant power levels of the fiber optic cable assembly and the standardization cable assembly when each are connected between a respective pair of output and input terminals.

4,309,106
BEAM POSITION LOCATER WITH PHOTODETECTOR ARRAY

Kenneth L. Smith, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 4, 1980, Ser. No. 118,007
Int. Cl.[3] G01J *1/44, 11/14*
U.S. Cl. 356—121 6 Claims



1. An apparatus for digitally locating the centrum of a luminous energy beam, comprising:

a shift register scanned linear photodetector array generating a luminous energy actuated video output signal;

a shift register clock generating pulses in correspondence to the sampling of array elements;

a means for generating a start signal at the beginning of each array scan;

a means for counting pulses;

a means for transmitting clock pulses to the counting means;

a flip-flop having a clock input connected to receive said video output signal and to trigger the flip-flop to change state only when the video output exceeds a given threshold value, so that it operates as a divide-by-two means;

means connected to be triggered in response to the first change of state of said flip-flop during a scan to stop said transmission of clock pulses and to start the transmission of pulses output from the flip-flop to the counting means until the next succeeding start signal.

4,309,107
LASER GYRO DITHER MECHANISM

Fred McNair, Woodland Hills, and Thomas M. Wirt, Malibu, both of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Jan. 11, 1980, Ser. No. 111,154
Int. Cl.[3] G01C *19/64;* F16F *7/10*
U.S. Cl. 356—350 8 Claims

1. An improved dither mechanism, comprising:

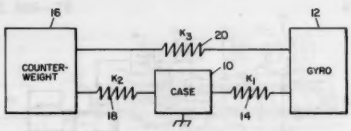
a first body having first and second coaxial hub attachment fixtures;

a second body having a first inner toroidal attachment fixture substantially concentric with said first hub attachment fixture;

a third body having a second outer toroidal attachment

fixture whose diameter is greater than said first toroidal attachment fixture and is substantially concentric with said first toroidal attachment fixture and said hub;

a first spring system angularly flexibly connecting said first toroidal attachment fixture and said first hub attachment fixture for angular resilience therebetween;



a second spring system angularly flexibly connecting said first and second toroidal attachment fixtures for angular resilience therebetween;

a third spring system angularly flexibly connecting said second toroidal attachment fixture and said second hub attachment fixture for angular resilience therebetween.

4,309,108

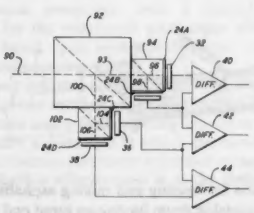
ANALYZER FOR COHERENT RADIATION

Edward T. Siebert, New Fairfield, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Continuation of Ser. No. 760,061, Jan. 17, 1977, abandoned. This application Feb. 5, 1979, Ser. No. 9,220

Int. Cl.³ G01B *9/02*; G02B *27/14*

U.S. Cl. 356—352 **28 Claims**



1. Apparatus for determining the wavelength of coherent radiation in the presence of incoherent ambient radiation which, in combination, comprises:

at least three unequal path interferometers with the radiation path length difference in each interferometer being substantially greater than the coherence length of the incoherent radiation, but substatially less than the coherence length of the coherent radiation, the average radiation path length in said three interferometers being different one from the others;

means for detecting radiation transmitted through each of said interferometers and for generating separate first, second, and third signals corresponding to the radiation leaving each of said interferometers;

means for processing said signals through electronic signal processing elements to detect and determine the wavelength of the coherent radiation,

means for equalizing the radiation intensity between pairs of said detecting means.

4,309,109

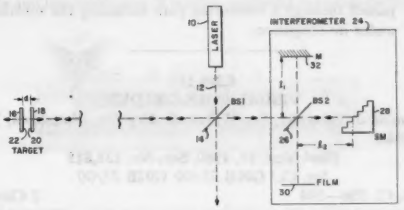
PULSED INTERFEROMETRIC REMOTE GAUGE

Jerry A. Blodgett, Annandale, Va., and Raymond A. Patten, Oxon Hill, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 25, 1972, Ser. No. 257,997

Int. Cl.³ G01B *11/02*

U.S. Cl. 356—355 **4 Claims**



1. Apparatus for measuring the separation distance between two light-reflecting surfaces comprising, in combination:

means for irradiating a pair of spaced, light-reflecting surfaces with a laser pulse;

interferometer means comprising an interferometer of the Michelson type having stepped mirror means in place of one of the two usual plane mirrors therein, said interferometer being positioned to receive the light reflected from said two light-reflecting surfaces; and

means for deriving the interference pattern produced by said interferometer,

each step of said stepped mirror having a step height δ, and a step depth Δ, which are equal, the interference pattern containing a series of columns some of which have interference fringe regions therein, the number of columns between the corresponding edges of two successive interference regions being designated n, and the separation distance being obtained from the formula

$$d = n\Delta$$

4,309,110

METHOD AND APPARATUS FOR MEASURING THE QUANTITIES WHICH CHARACTERIZE THE OPTICAL PROPERTIES OF SUBSTANCES

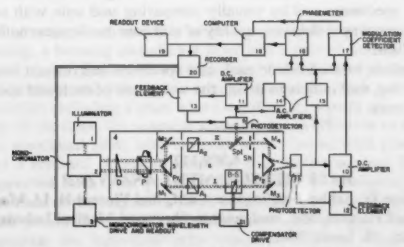
Leo Tumerman, Melzer Str. 10, Apt. 4, Rehovoth, Israel

Filed Apr. 10, 1979, Ser. No. 28,817

Claims priority, application Israel, Apr. 23, 1978, 54667

Int. Cl.³ G01J *4/00*

U.S. Cl. 356—365 **14 Claims**



1. A method for measuring the values of quantities which characterize the optical properties of substances, including light absorption and scattering, circular and linear birefringence, circular and linear dichroism, which comprises:

a. forming a beam of monochromatic linearly polarized light

the polarization vector of which rotates at a predetermined frequency and the intensity of which does not depend upon the orientation of the polarization vector;

b. measuring the phase of the electric signal produced in a photodetector by the said beam of light passed through a measuring path including the substance under investigation; or

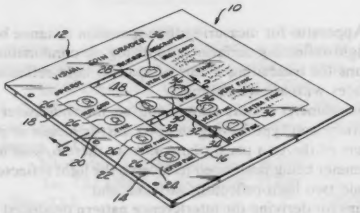
c. measuring the modulation coefficient of the electric signal produced in a photodetector by the said beam of light passed through a measuring path including the substance under investigation.

4,309,111

VISUAL COIN GRADER

Edmund J. Sobresky, Sr., Willow & Airy Sts., Pottstown, Pa. 19464

Filed Mar. 19, 1980, Ser. No. 131,815
Int. Cl.³ G09B *25/00*; G02B *27/00*
U.S. Cl. 356—394 **2 Claims**



1. A coin grading apparatus comprising:

a housing, said housing having an elongated recess;

a plurality of coin grading specimens mounted within said housing directly adjacent said elongated recess, each said coin grading specimen to accurately represent a specific wear state for a coin, there being a plurality of said specimens for each side of said coin to permit ascertaining the state of wear of both the obverse and reverse side of said coin, said specimens being divided into a pair of spaced-apart rows, one of said rows representing the obverse side of the coin and the other of said rows representing the reverse side of the coin, said specimens within each said row being arranged in a sequential manner along said recess from the most worn state to the least worn state;

a block slidably mounted by slidable means within said elongated recess and movable the entire longitudinal length of said recess, said block located between said rows, a coin to be graded according to the extent of wear is to be mounted within an opening on said block, whereby said coin is to be moved along side each of said specimens and by visually comparing said coin with said specimens the wear quality of said coin can be ascertained; and

indicia located beside each said specimen and on said housing, said indicia to define the wear state of each said specimen.

4,309,112

RATE MEASUREMENT ANALYZER

Holvor W. Ashley, Burlingame, Calif., and Vincent H. Li, Maryland Heights, Mo., assignors to Sherwood Medical Industries Inc., St. Louis, Mo.

Continuation of Ser. No. 39,150, May 15, 1979, abandoned. This application Aug. 18, 1980, Ser. No. 178,850
Int. Cl.³ G01N *21/01*
U.S. Cl. 356—436 **13 Claims**

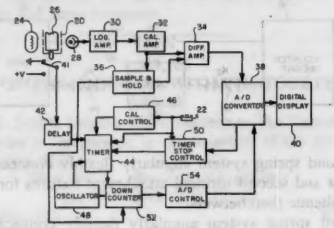
1. A system for measuring an unknown amount of a selected chemical substance in a biological first fluid comprising:

means for measuring the optical density of a fluid during a rate reaction;

means for providing a voltage proportional to the optical density of a fluid during its rate reaction;

means responsive to said proportional voltage for providing a difference voltage;

means for measuring a period of time equal to the time



required for the difference voltage of a second fluid to increase from one level to a selected higher level during a rate reaction; and

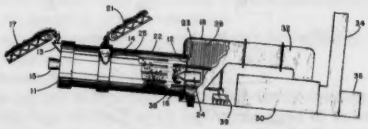
means for displaying a difference voltage representative of a change in the optical density of said first fluid at the conclusion of the period of time required for the difference voltage of the second fluid to increase from one level to a selected higher level.

4,309,113

ASPHALTIC CONCRETE RECYCLE EXHAUST GAS TREATMENT APPARATUS AND METHOD

Robert L. Mendenhall, 1770 Industrial Rd., Las Vegas, Nev. 89102

Filed Mar. 24, 1980, Ser. No. 133,019
Int. Cl.³ B28C *5/46*
U.S. Cl. 366—4 **6 Claims**



1. In a process for heating and mixing asphaltic concrete in an elongated rotatable drum having an input end and an opposite output end, supplying hot gases of combustion at said input end and directing said hot gases substantially along the length of said drum from said input end to said output end, wherein said composition is directed along said drum toward said output end while being exposed directly to said hot gases, and resulting in a stream of exhaust gases flowing out of said output end containing combustible hydrocarbon gases from the heated asphalt, the improvement comprising:

burning said combustible hydrocarbon gases by directing flame into said drum adjacent said output end and into said stream of exhaust gases and toward said drum input end.

4. In an apparatus for heating and mixing asphaltic concrete composition comprising an elongated rotatable drum having an input end and an opposite output end, means for supplying hot gases of combustion at said input end toward said output end, means for recovering heated composition at said output end, and a port at said output end for venting exhaust gases therefrom, the improvement comprising:

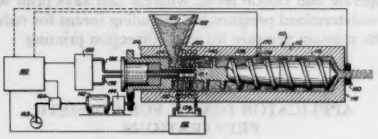
burner means adjacent said port for directing flame into said drum toward said input end.

4,309,114

METHOD FOR ATTAINING MAXIMUM PRODUCTION EFFECTIVENESS IN A PLASTICATING EXTRUDER

Reuben Klein, Edison, and Imrich Klein, Highland Park, both of N.J., assignors to Scientific Process & Research, Inc., Somerset, N.J.

Filed Feb. 11, 1980, Ser. No. 120,390
Int. Cl.[3] B29F 3/00
U.S. Cl. 366—79 4 Claims



1. The method of attaining a desired maximum production effectiveness in a plasticating extruder through improved solids conveying, and operating the plasticating extruder at said maximum production effectiveness, the plasticating extruder being of the type having a barrel with an inner surface, a screw conveyor with an outer surface, a solid materials feed means for feeding solids into the barrel to the screw conveyor, and a solids conveying zone in which the solids are advanced by the screw conveyor through the barrel in a direction from an upstream end toward a downstream end during operation of the plasticating extruder, said method comprising:

as one step, operating the plasticating extruder while varying the temperature of the barrel inner surface along at least a portion of the solids conveying zone, independent of the screw conveyor outer surface temperature, while simultaneously monitoring a production effectiveness parameter, until a first optimum is reached for the monitored production effectiveness parameter based upon a particular barrel inner surface temperature;

as another step, operating the plasticating extruder while varying the temperature of the screw conveyor outer surface of at least said portion of the solids conveying zone, independent of the barrel inner surface temperature, while simultaneously monitoring the same production effectiveness parameter, until a second optimum is reached for the monitored production effectiveness parameter based upon a particular screw conveyor outer surface temperature;

repeating said one step and said other step, alternately, independent of one another, until a further barrel inner surface temperature and a further screw conveyor outer surface temperature are reached at which the monitored production effectiveness parameter is further optimized such that the production effectiveness is at the desired maximum; and

continuing operation of the plasticating extruder with the barrel inner surface essentially at said further barrel inner surface temperature and the screw conveyor outer surface at said further screw conveyor outer surface temperature, thereby operating the plasticating extruder at said maximum production effectiveness.

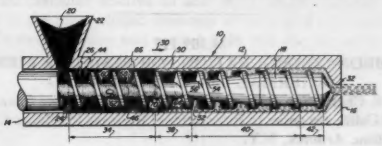
4,309,115

METHOD AND APPARATUS FOR IMPROVED SOLIDS CONVEYING IN PLASTICATING EXTRUDERS

Imrich Klein, 70 S. Adelaide Ave., Highland Park, N.J. 08904, and Reuben Klein, 103 Jeremy Ct., Edison, N.J. 08817

Filed May 14, 1980, Ser. No. 149,675
Int. Cl.[3] B29B 1/06
U.S. Cl. 366—79 12 Claims

1. The method of increasing the production effectiveness of a plasticating extruder through improved solids conveying, the solids being of a specified material and the plasticating extruder being of the type having a barrel with an inner surface, a screw conveyor including a core and a flight with flanks extending generally radially between the core and a radially outermost crest of the flight, the screw conveyor having an outer surface extending over the core and over the flight, a solid materials feed means for feeding solids into the barrel to the screw conveyor, and a solids conveying zone in which the solids are advanced by the screw conveyor through the barrel, in a direction from an upstream end toward a downstream end, said method comprising the step of increasing the differential between the coefficient of friction exhibited between the solids and the inner surface of the barrel along the solids conveying zone and the coefficient of friction exhibited between the solids



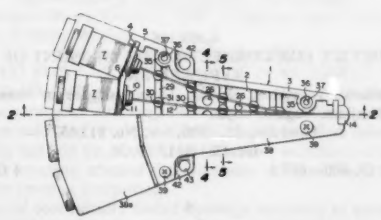
and the screw conveyor outer surfaces in the solids conveying zone by providing a selected coating on the outer surface of the screw conveyor in the solids conveying zone, along at least the outer surface of the core of the screw conveyor and the outer surface of the flanks of the flight of the screw conveyor, the coating being selected for exhibiting a lower coefficient of friction between the selected coating and the solids of specified material than would exist between the same solids and corresponding uncoated outer surfaces of the core and the flanks, thereby increasing the production effectiveness of the extruder.

4,309,116

PRINT HEAD ASSEMBLY OF WIRE DOT MATRIX PRINTER

Katsumi Maeda, Shizuoka, Japan, assignor to Star Seimitsu Kabushiki Kaisha, Japan

Filed Aug. 2, 1979, Ser. No. 62,982
Claims priority, application Japan, Aug. 2, 1978, 53-93659
Int. Cl.[3] B41J 3/12
U.S. Cl. 400—124 21 Claims



7. A print head assembly of a wire dot matrix printer comprising: a housing including a floor and a pair of sidewalls, at least one set of solenoid assemblies carried by a rear portion of the housing and disposed in a transverse array, each solenoid assembly including a print wire extending forwardly along one side of the floor, the solenoid assembly being effective to drive the associated print wire between a rear inoperative position and a forward operative position, and a wire support block supported on a front portion of the housing for aligning the free ends of the respective print wires in a given vertical reference plane, the housing including first guide means which constrain the individual print wires in order to suppress a movement thereof in a direction transverse to their reciprocating movement, and second guide means which constrain the individual print wires in order to constrain a movement thereof in a vertical direction which is aligned with the vertical reference plane, wherein the first guide means comprises first projecting means which vertically extends from the floor of the

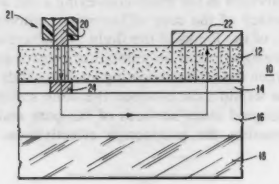
housing for forming at least two vertical bearing surfaces per print wire, and wherein the second guide means comprises second projecting means extending vertically from the floor of the housing for forming at least one first transverse bearing surface per print wire, and third projecting means extending vertically from the floor of the housing for forming at least one second transverse bearing surface per print wire, in which at least one of the first and the second projecting means comprises a rib having a plurality of open slots formed therein which receive the associated print wires, the opposite inner sides of each slot defining the two vertical bearing surfaces.

4,309,117

RIBBON CONFIGURATION FOR RESISTIVE RIBBON THERMAL TRANSFER PRINTING

Leo S. Chang, San Jose, and Anthony DeMore, Santa Cruz, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1979, Ser. No. 106,614
Int. Cl.³ B41J *31/02*
U.S. Cl. 400-241.1 **9 Claims**



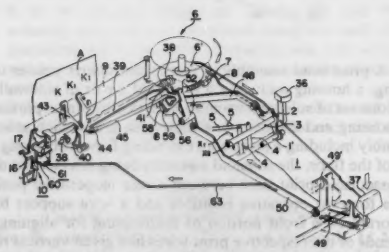
1. A resistive ribbon for thermal transfer printing comprising
a two layered resistive layer having a first layer and a second layer wherein the ratio of the resistance of the second layer to the resistance of the first layer, R_{second}/R_{first}, is 1.1 to 1000,
a conducting layer positioned on said second resistive layer, and
an ink transfer layer positioned on said conductive layer.

4,309,118

DEVICE FOR CORRECTION OF MISPRINT OF A TYPEWRITER

Toshikatsu Terashima, Sakaki, Japan, assignor to Nobuyoshi Nakajima, Nagano, Japan

Filed Jan. 21, 1980, Ser. No. 113,452
Int. Cl.³ B41J *29/36*
U.S. Cl. 400—697.1 **4 Claims**



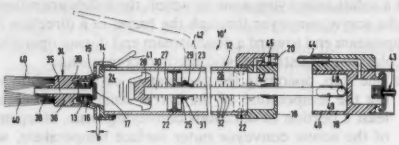
1. A correction device for a typewriter including a carriage, movable by an escapement mechanism, a ribbon having a correction portion, a ribbon winding device operable by the actuation of a type character key to intermittently shift the portion of said ribbon which is in a printing position, holder means to move said ribbon into a printing position, a ribbon lever connected to said ribbon winding device for moving said ribbon winding device in response to said key, and a back spacing key adapted to return said carriage to a position wherein a misprinted character is in a printing position, said correction device comprising:
a correction key operatively connected to said escapement mechanism so as to make said escapement mechanism inoperative and operatively connected to said ribbon holder means to raise said ribbon holder means and to operate said ribbon lever, wherein said keys print with a predetermined pressure and including means for reducing the printing pressure for said correction printing.

4,309,119

APPLICATOR DEVICE FOR COSMETIC PREPARATIONS

Adam Wittersheim, Mühltal, Fed. Rep. of Germany, assignor to Goldwell GmbH, Chemische Fabrik H.E. Dotter, Darmstadt-Eberstadt, Fed. Rep. of Germany

Filed Jun. 18, 1980, Ser. No. 160,821
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1979, 2926796; Sep. 20, 1979, 2937973; Mar. 8, 1980, 3008976
Int. Cl.³ A46B *11/02*; B43K *5/06*; A45D *24/22*
U.S. Cl. 401—188 R **21 Claims**



1. Applicator device for cosmetic preparations, having a closed, substantially cylindrical casing, a piston dividing said casing into two variable-size chambers sealed from one another, being displaceably disposed in said casing, one of said variable-size chambers forming a reservoir chamber fillable with a cosmetic preparation and being combined with a removable applicator provided with a passage for the preparation, by means of which applicator the cosmetic preparation can be applied to a body part to be treated in quantities controllable by means of a self-closing valve, the other of said variable-size chambers being located opposite said preparation reservoir chamber and being provided with a connection for admitting compressed gas for displacing the piston to reduce the size of the preparation reservoir chamber, said self-closing valve being disposed in said passage for preventing escape of the preparation when the applicator is removed and having a body, a plunger in said casing extending into said preparation reservoir chamber and engaging directly or indirectly said valve body of said self-closing valve, said plunger passing through said piston in a displaceable and sealed manner and being coupled in its end area remote from said self-closing valve with a venting valve for said other variable-size chamber such that maximum opening movement transmitted by said valve body to said plunger upon opening of said self-closing valve opens said venting valve.

4,309,120

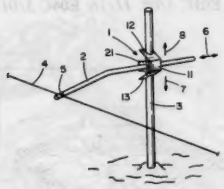
COMPOUND CLAMP

Paul E. Werthmann, 530 Alyce Ln., Aurora, Ill. 60505

Filed Jan. 15, 1979, Ser. No. 3,114
Int. Cl.³ F16B *7/04*
U.S. Cl. 403—18 **1 Claim**

1. A compound clamp having two crossed resilient yokes formed from an integral metal piece comprising a generally rectangular and flat base section for the two yokes, two long resilient and apertured arms projecting from a first set of opposite sides of the base section to define a first generally concave long yoke configuration, two short resilient and apertured

arms projecting from a second set of opposite sides of the base section to define a second generally concave short yoke configuration, the two yokes being generally disposed at right angles with respect to one another with the apertures of the short yoke being of a different size than the apertures of the long yoke, and each yoke arm being formed at the projecting



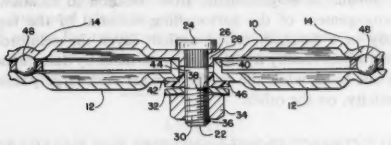
extremity of the arm with a finger grip section by which the manual depression of two opposite finger grip sections loosens the resilient yoke clamp on a first elongated element inserted in the first yoke to enable relative movement of that element relative the yoke and without disturbing the clamping engagement of a second elongated element inserted in the other yoke, whereby both elements are adjustably cross clamped.

4,309,121

SWIVEL CONSTRUCTION

Edward J. Salame, c/o Travers Welding Company, Mechanic St., Gardner, Mass. 01440

Filed Jan. 7, 1980, Ser. No. 109,827
Int. Cl.³ F16D *1/12, 3/00*
U.S. Cl. 403—164 **8 Claims**



1. A swivel construction comprising a top plate, a bottom plate, a swivel connecting the plates, aligned center holes in the plates,

the swivel comprising a center bolt, a head on the bolt in contact with the upper surface of the top plate, a threaded end portion on the bolt, the bolt extending through the aligned center holes and the threaded portion of the bolt extending past the bottom plate, means preventing relative rotation of the bolt and the top plate,

a flanged bearing sleeve on the bolt, the flange thereof underlying the portion of the bottom plate adjacent its center hole, the sleeve extending generally through the bottom plate center hole,

a nut on the bolt threaded portion providing adjustment of the degree of resistance to relative rotation of the plates by variable pressure on the sleeve flange and bottom plate,

and interengaging means between the washer and bolt preventing relative rotation of the same.

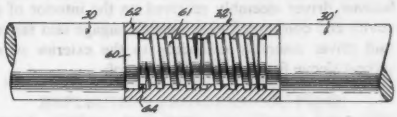
4,309,122

INSTALLATION ROD FOR AN UNDERGROUND PIPE INSTALLER DEVICE

William O. Schosek, 7942 Marx Dr., North Fort Myers, Fla. 33903

Filed Aug. 10, 1979, Ser. No. 65,724
Int. Cl.³ F16B *7/00*
U.S. Cl. 403—307 **1 Claim**

1. A plurality of rigid steel rod sections for multiple coupled end to end arrangements, for use in an underground pipe installer device having reciprocating drive jaws to tightly engage said rod sections to form an underground hole between two given points in a first direction of operation by the pipe installer device and to withdraw a pipe, attached to a leading end of a coupled arrangement, into the length of the hole in a second direction of operation, said rod sections comprising a plurality of main predetermined rod section lengths of a substantially uniform predetermined outer diameter and including an axial outwardly extending reduced diameter threaded stud portion from each end of each rod section length, and an annular shoulder portion of a predetermined length and of a reduced diameter relative to said main length diameter and equal to the outer thread diameter of each said stud portion, and formed between said main length and the threaded stud portion; said threaded stud portion of each rod length being



receivable in screw threaded engagement within one end portion of each of a plurality of standard rigid steel sleeve couplers which are provided and are of a same substantially uniform predetermined outer diameter as said main rod lengths and including a main mating continuously threaded interior portion along a main central length and terminating in an unthreaded open lead-in annular skirt portion at each end of a predetermined depth and diameter to receive one of said annular shoulders as a snug fit, the threaded stud and shoulder portions of each rod section length being receivable within each end of each of the couplers, each of said threaded studs being of such a length as to define a relatively short span between opposed end faces thereof of a length less than the length of the thread crests on said threaded studs when a plurality of rod lengths are fully threaded into each end of the couplers.

4,309,123

METHOD AND APPARATUS FOR FASTENING MISALIGNED STRUCTURAL MEMBERS

Raymond J. Moore, Torrance, Calif., assignor to Rajac Corporation, Wilmington, Del.

Filed Oct. 26, 1979, Ser. No. 88,612
Int. Cl.³ F16B *5/02;* **B23Q** *3/00;* **B23P** *19/04;* **B25B** *27/14*
U.S. Cl. 403—408 **8 Claims**

1. Apparatus for attaching one structural member to another wherein said one structural member includes a first fastener opening and said another structural member includes a second fastener opening adapted for alignment subjacent said first fastener opening comprising:

a set of eccentrically nested bushings including an interior bushing having a fastener bore formed therein in eccentric alignment relative a first circular exterior surface thereof and an exterior bushing having a second circular exterior surface conformed for receipt in said first fastener opening and seating surface on the interior thereof eccentrically aligned relative said second circular exterior surface, said seating surface being conformed to mate with said first exterior surface on said interior bushing said interior and exterior bushings including turning means for aligning the eccentrication thereof relative said first fastener opening, said nested bushings each include exposed edges provided with engaging structures for the independent manipulation thereof, said interior bushing is axially retained within said exterior bushing, and said exterior bushing is axially retained within said first fastener opening by swaging;

a fastener conformed for insertion in said fastener opening bore and adapted to extend through said second fastener opening upon the eccentric alignment of said interior and exterior bushings within said fastener opening; and

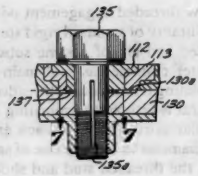
fastener engaging means attached to said another structural member for engaging the inserted end of said fastener.

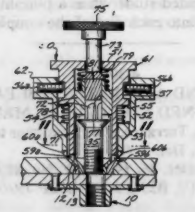
3. Apparatus for aligning two eccentric nested bushings seated in a first structural member relative an attachment opening in a second structural member to allow the insertion of a fastener through the common interior thereof, comprising:

a first tubular sleeve having an interior bore eccentrically disposed relative the exterior thereof and including first engaging means on one end thereof for engaging in rotation the exterior one of said nested bushings;

a second tubular sleeve telescopically received in said interior bore of said first tubular sleeve including an eccentric cavity therein, said second tubular sleeve including second engaging means on one end thereof for engaging in rotation the interior one of said nested bushings;

a fastener driver assembly received on the interior of said cavity and conformed to releasably engage said fastener, said driver assembly extending to the exterior of said second sleeve for manipulation thereof;





first spring means deployed between said first and second sleeves for advancing said second sleeve out of said first sleeve; and

second spring means deployed between said second sleeve and said driver assembly for advancing said driver assembly towards said one end of said second sleeve.

8. A method for aligning the interior bore of two eccentric nested bushings in one structural member in coaxial alignment with a circular fastener opening formed in another structural member comprising the steps of:

inserting said nested bushings into said one structural member;

inserting a fastener into the interior of an installation tool having an exterior and interior sleeve in telescoping arrangement;

engaging the exterior one of said nested bushings by said exterior sleeve;

engaging the interior one of said nested bushings by said interior sleeve; and

manipulating said interior and exterior sleeves in rotation until said fastener drops into said fastener opening.

4,309,124

REINFORCED ASPHALT LAYER

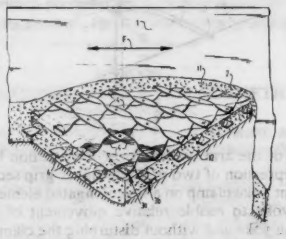
Augustinus W. M. Bertels, Arnhem, Netherlands, assignor to Bruil-Arnhem Wegenbouw B.V., Arnhem, Netherlands

Filed Feb. 1, 1980, Ser. No. 117,548

Claims priority, application Netherlands, Feb. 15, 1979, 7901193

Int. Cl.³ E01C *5/08, 11/16;* E04C *5/01*

U.S. Cl. 404—70 **4 Claims**



1. A reinforced asphalt layer, consisting of an asphalt-forming mixture of bitumen with mineral particles having a characteristic particle size, in which is embedded a reinforcing network of elongated reinforcing elements which, where they intersect one another, have a connection to one another which at least to a certain degree fixes the cross-bond, said reinforcing elements at least locally having a cross-section providing a width dimension of the order of said characteristic particle size and a thickness much less than said width dimension, and said elements being non-planar so as to change orientation of said width dimension longitudinally from location to location of their engagement of the surrounding material of the layer, whereby in a finished, rolled asphalt layer the reinforcing elements adjust locally to the mineral particles by deformation, on the one hand, while the reinforcing network largely retains its elasticity, on the other.

4,309,125

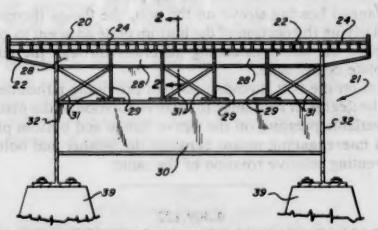
INTEGRATED BRIDGE CONSTRUCTION

George S. Richardson, 2670 Spring Grove Ter., Colorado Springs, Colo. 80906

Filed Oct. 6, 1980, Ser. No. 194,564

Int. Cl.³ E01D *19/12*

U.S. Cl. 14—73 **15 Claims**



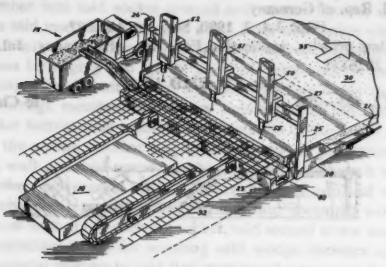
1. An elongated bridge construction including a support structure and a deck system, said support structure including structural support members at least some of which have a vertically oriented web of substantially uniform thickness having a top edge, said deck system being fixedly connected directly to said top edges and having means for providing substantially equal structural strength in both longitudinal and transverse directions relative to the length of the bridge.

4,309,126

MACHINE FOR SEPARATING CONCRETE FROM STEEL

Deems M. Pfaff, 6801 W. 150th St., Apple Valley, Minn. 55124

Filed Apr. 17, 1980, Ser. No. 140,959
Int. Cl.³ E01C *23/12*
U.S. Cl. 404—90 17 Claims



17. An apparatus for pulverizing concrete on roadways, and for separating same from reinforcing steel embedded therein, comprising

(a) a movable wedge-shape structure for urging beneath said concrete;

(b) a frame assembly attached to said wedge-shape structure and having a transverse beam bridging said concrete;

(c) at least one movable carriage carried by said beam, and having a reciprocable hammer attached thereto;

(d) means for moving said carriage along said beam to a plurality of positions over said concrete;

(e) motive power means attached to said wedge-shape structure for sliding said structure under said concrete and along said roadway; and

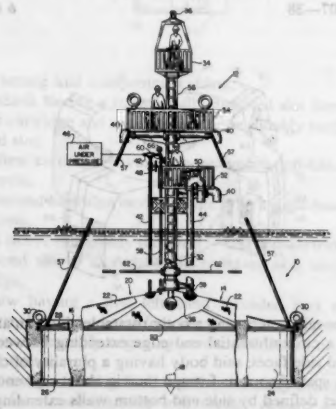
(f) means for reciprocating said hammer against said concrete while said concrete is supported on said wedge-shape structure.

4,309,127

APPARATUS FOR CONTROLLING SUBMARINE OIL LEAKAGE

Reginald E. Jacobs, 46 Colebrook St., Hartford, Conn. 06112

Filed May 21, 1980, Ser. No. 151,963
Int. Cl.³ E02B *15/04*
U.S. Cl. 405—60 8 Claims



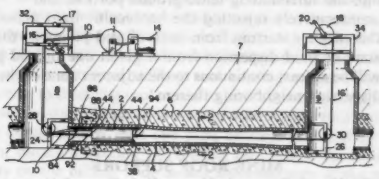
1. Apparatus for controlling leakage from a submarine oil source near the sea bottom, said apparatus comprising non-buoyant submergible downwardly opening collection receptacle means having rigid substantially impervious top and side walls for cooperating with the sea bottom to define a substantial enclosure containing the oil source, buoyancy means for supporting at least a portion of the weight of said receptacle means to aid in underwater maneuverability during positioning of said receptacle means at a submarine site and including at least one distensible envelope having collapsed and distended conditions, said envelope being attached to said receptacle means above said top wall and movable between active and inactive position being in collapsed condition and disposed generally adjacent said top wall, said envelope in its active position being in its distended condition and extending laterally outwardly in spaced relation to said top wall, means for introducing fluid under pressure into and releasing fluid under pressure from said envelope to alter the condition of said envelope, and means for recovering collected oil from said enclosure.

4,309,128

METHOD AND APPARATUS FOR REMOVING DEFLECTION FROM PLASTIC PIPES

Richard L. Williams, 9180 Parker Rd., Harrod, Ohio 45850

Continuation-in-part of Ser. No. 97,395, Nov. 26, 1979, which is a continuation-in-part of Ser. No. 72,073, Sep. 4, 1979, abandoned. This application Nov. 13, 1980, Ser. No. 206,821
Int. Cl.³ F16L *1/00*
U.S. Cl. 405—154 16 Claims



1. The method of restoring the diameter of a deflected flexible sewer or water pipe substantially to its original shape in an earth and bedding material encompassing situ comprising the steps of:

(a) introducing into one end of the pipe a cylindrical vibrator-compactor device having an outside diameter slightly less than the inside diameter of the pipe,

(b) initiating vibration of the device to transmit vibrations through the wall of the pipe to reform the bedding material to a higher density and stress relieve the pipe so as to restore the inside diameter of the pipe substantially to its original shape, and

(c) propelling the device through the entire length of installed pipe completely backfilled substantially to the level of the original surface.

4,309,129

METHOD AND APPARATUS FOR IMPROVING THE STRENGTH OF SOFT VISCOUS GROUND

Yuichiro Takahashi, 1-2-6, Bandai, Niigata City, Niigata Pref. 960, Japan

Filed May 8, 1978, Ser. No. 903,704
Claims priority, application Japan, May 23, 1977, 52-59517
Int. Cl.³ E02D *3/12*
U.S. Cl. 405—269 12 Claims

1. A method for improving the strength of the soft viscous ground by injection from the ground surface of a hardenable fluid material comprising essentially a cement milk or cement-/water mixture, said method comprising the steps of:

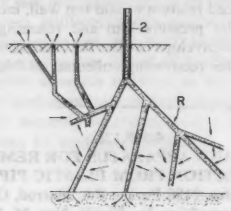
(a) introducing into the ground to a required depth an assembly comprising a tubular method adapted for supplying the hardenable fluid material into the ground, injection holes for the hardenable fluid material formed in the wall

portions of said tubular member and a piston rod slidably disposed within said tubular member;

(b) supplying a fluid material under pressure into said tubular member from the top thereof;

(c) obtaining a measure of the ground strength as a delivery pressure of the fluid material that prevails when the piston rod has descended to a position such that the fluid material contained in the tubular member can flow outwardly from the injection holes formed in said tubular member;

(d) adjusting the injection pressure of the hardenable fluid material based upon said measure of the ground strength;



(e) injecting the hardenable fluid material from points where the above measure was obtained into the ambient zones of the ground for distributing the hardenable fluid material into the surrounding underground portion; and

(f) consecutively injecting the hardenable fluid material in this manner starting from each of said points so that the zone of fluid dispersion from a given one of said points will be at least continuous to the adjacent zone of the fluid dispersion neighboring thereto.

4,309,130

MINE ROOF SUPPORT

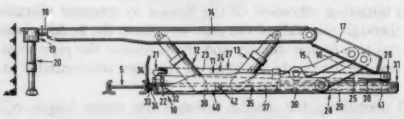
Hans-Ferdinand Bemmerl, Herne, Fed. Rep. of Germany, assignor to Bochumer Eisenhütte Heintzmann GmbH & Co., Bochum, Fed. Rep. of Germany

Filed Jun. 3, 1980, Ser. No. 156,213

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1979, 2928150

Int. Cl.³ E21D *15/44*

U.S. Cl. 405—294 **10 Claims**



1. A mine roof support for a mine gallery in which a mining device with a large cutting region works in a mine face and a support element moves along the mine face, the mine roof support comprising two sole sliding elements; a bridge element connecting said sole sliding elements with one another at the mine face ends of the latter; a roof supporting element supported on said sole sliding elements; means for supporting said roof supporting element on said sole sliding elements; means for displacing said sole sliding elements and connected with said bridge element; guiding means arranged between said sole sliding elements and including two laterally spaced guiding rods, said guiding rods being connected at their mine face ends with said support element, said guiding rods being also connected at their backfilling ends with said bridge element via said displacing means; and a carriage positively incorporated between said guiding rods of said guiding means and carrying a cylinder-and-piston unit which connects said carriage with said guiding means at the backfilling end of the latter, said carriage also having a coupling member which extends in backfilling direction and connects said carriage with said displacing means at the backfilling end of the latter.

4,309,131

MINE ROOF SUPPORT

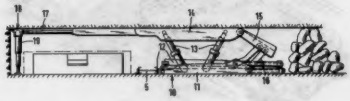
Alfred Bollmann, Bochum, Fed. Rep. of Germany, assignor to Bochumer Eisenhütte Heintzmann GmbH & Co., Bochum, Fed. Rep. of Germany

Filed Jul. 2, 1980, Ser. No. 166,697

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1979, 2928151

Int. Cl.³ E21D *15/44*

U.S. Cl. 405—294 **15 Claims**



1. A mine roof support, comprising a base; a supporting prop extending upwardly from said base; an elongated roof-supporting element having one longitudinal portion which is supported on said base by said supporting prop and has a predetermined width, said roof-supporting element having another longitudinal portion which is telescopable relative to said one portion toward a mine face, said telescopable portion of said roof-supporting element having at least a free end section which is formed as a housing having a width, in direction of elongation of a mine, substantially corresponding to the width of said one portion supported by said supporting prop; and a thrust prop arranged to support said free end section of said telescopable portion of said roof-supporting element, said thrust prop having a roof-side end section which is forcedly displaceable in said housing in direction of elongation of a mine and pivotable in a substantially vertical plane about an axle arranged in said housing.

4,309,132

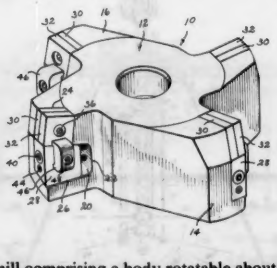
FACE MILL WITH ADJUSTABLE CUTTING INSERTS

Thomas Adamson, 5512 Colonial La., South Bend, Ind. 46614, and Armand J. Schmaltz, 51233 Hollyhock Rd., South Bend, Ind. 46637

Filed Feb. 28, 1980, Ser. No. 125,576

Int. Cl.³ B26D *1/12*

U.S. Cl. 407—38 **6 Claims**



1. A face mill comprising a body rotatable about an axis and including a circumferential end edge extending between first and second side faces; said body having a plurality of circumferentially spaced sockets formed therein about said end edge; each socket defined by side and bottom walls extending from said first side face and terminating at an end wall spacedly located from said second side face; a wedge member, insert and a shim each carried within at least two of said sockets; said wedge member being positioned adjacent said side wall and

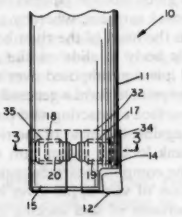
end wall spaced from the bottom wall of its receiving socket, said shim being positioned in contact with said wedge member and against said socket side and bottom walls, and said insert being positioned next to said shim against said bottom wall and in contact with said wedge member, means for retaining said shim and insert in contact with said wedge member; means associated with each wedge member for urging the wedge member into said socket toward said socket bottom wall to cam said insert and shim part away from said socket end wall and beyond the plane of said first side face of said body; said means for urging said wedge member being a screw member having a head abutting and a shank extending freely through the wedge member, said screw member threaded into said socket bottom wall wherein upon rotation of the screw member the wedge member will be drawn toward the socket bottom wall; a second screw member associated with each wedge member, said second screw member threaded into said wedge member and extending therethrough into abutment with the bottom wall of its receiving socket, said second screw member constituting means for securing said wedge member against movement relative to said first mentioned screw member and face mill body; said shim and insert retainer means being a lock pin extending through said shim and insert and into said socket side wall, said shim and insert being shiftable transversely relative to said pin to accommodate camming movement of the wedge member.

4,309,133

ULTRA-ADJUST BORING AND MILLING SYSTEM

Martin N. Hamilton, R.D. #4, Middle Rd., Meadville, Pa. 16335

Filed Apr. 11, 1980, Ser. No. 139,545
Int. Cl.³ B23B *29/02, 29/034*
U.S. Cl. 408—183 **5 Claims**



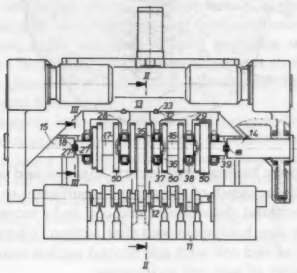
1. A boring tool comprising a shank,
said shank having a transversally disposed slot therein,
a first cartridge and a second cartridge slidably supported in said slot,
said first cartridge having a bore with a left-hand thread therein,
said second cartridge having a bore with a right-hand thread therein,
a first sleeve threadably received in said first cartridge and a second sleeve threadably received in said second cartridge,
a screw having a first left hand threaded part engaging internal thread on said first sleeve and second part on said screw threadably engaging an internal thread on the second sleeve,
said screw parts being fixed together whereby the cartridges can be moved laterally individually toward and away from each other by rotating said screw or by rotating either said sleeve and a locking screw extending through said shank engaging said screw for locking said screw in position.

4,309,134

CRANKSHAFT MILLING MACHINE

Karlheinz Schmid, Neckartenzlingen, Fed. Rep. of Germany, assignor to Gebrueder Heller, Maschinenfabrik GmbH, Nuertingen, Fed. Rep. of Germany

Filed Aug. 6, 1979, Ser. No. 64,068
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1978, 2836341
Int. Cl.³ B23C *3/06*
U.S. Cl. 409—231 **2 Claims**



1. A crankshaft milling machine, comprising milling slide means, drive spindle means rotatably supported in said milling slide means, milling tool means including a plurality of disk milling cutters maintained at axial spacings from one another along said tool means, milling tool bearing means rotatably supporting said milling tool means at least at two axially spaced locations in said milling slide means, said milling tool bearing means comprising at least one axial bearing, said milling tool bearing means mounting the milling tool means for rotation directly on the milling slide means independently of the drive spindle means and along a common axis of rotation with said drive spindle means, and clutch means operatively interposed between said drive spindle means and said milling tool means, said clutch means comprising cooperating surface means including clutch surface means and complementary surface means formed in the drive spindle means and in said milling tool means, said cooperating surface means being oriented generally parallel to the common axis of rotation, said clutch means further comprising means for engaging said cooperating surface means thereby transmitting torque but not axial forces, wherein said clutch surface means comprise expandable first wedge means (**19, 20**) defining the clutch surface means on the outside thereof, contractable second wedge means (**21, 22**) operatively positioned between the first wedge means, and means (**24, 25**) for contracting the second wedge means to expand the first wedge means, thereby engaging said cooperating surfaces.

4,309,135

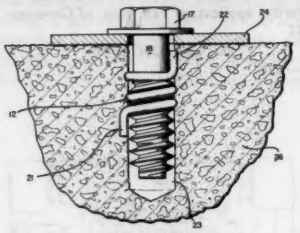
CONCRETE ANCHOR

Charles E. Gutshall, Rockford, Ill., assignor to Keystone Consolidated Industries, Inc., Peoria, Ill.

Filed Jul. 18, 1980, Ser. No. 169,979
Int. Cl.³ F16B *13/00*
U.S. Cl. 411—17 **12 Claims**

1. A concrete anchor comprising in combination:
an expansion nut consisting of a resilient cylindrical coil having substantially uniform inner and outer diameters throughout its length,
said coil having a first tab adjacent one of its ends which is inclined toward the axis of said coil in a direction generally parallel thereto, and a second straight tab adjacent the other of said ends, said second tab being inclined away from said axis in a direction away from said first tab portion;

a bolt having a first end provided with driving means for rotation, and a continuous helical groove adjacent a second end, said groove having a pitch and a direction of rotation corresponding to those of said coil;



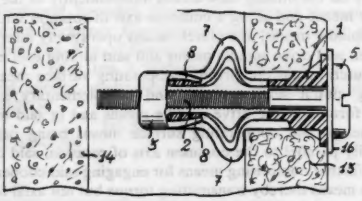
said groove having a first section adjacent said second end in which the depth of the groove is sufficient to receive said coil without distortion of said coil and a second section of lesser depth adjacent said first section, whereby engagement of said coil with said second section causes the outer diameter of said coil to increase.

4,309,136

FASTENING DEVICE

Jacques Talan, Paris, France, assignor to Bassan & Cie., Paris, France

Filed Jun. 22, 1979, Ser. No. 51,212
Claims priority, application France, Jul. 10, 1978, 78 20478
Int. Cl.³ F16B *13/04*
U.S. Cl. 411—36 **5 Claims**



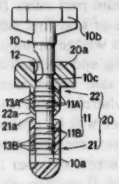
1. A fastening device of the type adapted to be inserted into a bore formed through a hollow partition or wall, which comprises a tightening screw provided with a head adapted to engage the outer surface of the partition, a nut screwed on the screw end opposite said head, a tubular plug of deformable material surrounding said screw and disposed between the screw head and said nut, on the outer surface of said plug, a plurality of longitudinal splines separated by gaps, in the bottom of each gap, a slit extending along at least one portion of the plug length, except at the ends thereof, on the nut face registering with said plug, a series of spaced deformable lugs equal in number to the gaps formed between the longitudinal splines of the plug, and each lug is engaged in a gap between two adjacent longitudinal splines of the plug, so that said nut cannot rotate relative to said plug when said tightening screw is screwed into the former and thereby said plines of said plug are not only being deformed in a longitudinal direction during the screwing but also twisted and intermingling with one another so as to form an anchoring knot, said lugs of said nut being so deformable that when said splines of said plug are twisted, said lugs of said nut are also twisted and still retained in said gaps between said splines so as to form an integral part of said anchoring knot.

4,309,137

BLIND RIVET

Toshie Tanaka, Machida, and Kunio Hara, Kawasaki, both of Japan, assignors to Nifco Inc., Yokohama, Japan

Filed Mar. 7, 1979, Ser. No. 18,381
Claims priority, application Japan, Mar. 9, 1978, 53-29065[U]
Int. Cl.³ F16B *13/06*
U.S. Cl. 411—45 **4 Claims**



1. A plastic blind rivet for use in an apertured panel, said rivet including a shank having an enlarged portion at each of the opposite ends thereof and a plurality of locking means provided on the outer surface of said shank in at least two axially spaced portions of said shank, a two piece upper and lower rivet body insert molded around said shank, said body including an encircling head portion having locking means and located at the upper end of one body piece spaced from one tubular wall with the interior surface of said wall having engaging means adapted to intimately mesh in complementary engagement with one portion of said shank locking means, the second body piece continuously enclosing said opposite enlarged end of said shank and having internal engaging means adapted to mesh in complimentary engagement with the second portion of said shank locking means, the end surfaces of said body pieces being in opposition at a point on said shank positioned intermediate the two portions of the shank carrying said locking means, the upper piece of the rivet body being provided with a guide surface tapered in the direction of the other of the opposed surfaces, whereby an upward pull of the shank away from the head of the rivet body causes the lower piece of the rivet body to slide on the guide surface of the upper piece until it is superimposed over the upper piece causing it to radially expand to form a generally flange-like member with its interior surface contacting said panel and press at least one given panel against the head of the rivet body and further to move said shank locking means into ratcheted locked engagement with the complimentary engaging means in the head and tubular portion of said upper rivet body piece, said two axially spaced portions of said locking means on said shank being separated by an axially smooth section on which said opposing ends of said rivet body pieces terminate.

4,309,138

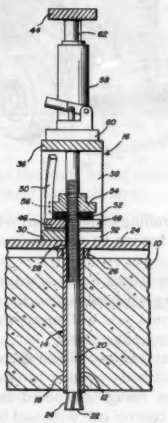
FLOOR ANCHOR

Davis R. Jarman, 612 Ward Dr., and Virgil H. Hinson, 206 Fairway Oak, both of Brunswick, Ga. 31520

Filed Feb. 8, 1980, Ser. No. 119,825
Int. Cl.³ F16B *13/06*
U.S. Cl. 411—55 **2 Claims**

1. A floor anchor assembly for anchoring through a floor slab having a bore formed therethrough, said anchor assembly including a sleeve for snug reception through said bore, an elongated shank having first and second ends, said first end including a tapered enlargement thereon tapering toward said second end and being of a maximum diameter less than the outside diameter of said sleeve, said second end having external threads thereon, said shank exclusive of said enlargement, being freely slidable through said sleeve and of a length greater than said sleeve, the minor diameter end of said enlargement being wedgedly receivable within the adjacent end of said sleeve when said shank extends therethrough, said shank and sleeve being adapted to have force means operatively con-

nected therewith for axially displacing said shank relative to said sleeve in a direction to wedge said enlargement in and radially expand said adjacent sleeve end, said enlargement including circumferentially spaced, radially outwardly tapering and longitudinally extending flutes formed thereon, said flutes extending in a spiral manner about said enlargement and being inclined less than 30° relative to the longitudinal center line of said shank, force generating structure operatively connected between said sleeve and shank operative to exert an axial force on said shank to shift the latter relative to said sleeve in a direction advancing said other end of said shank,



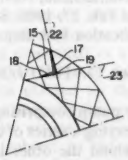
said force generating structure including means for applying rotational torque to said shank in the direction in which said flutes are spiraled for advancement thereof into said adjacent end of said sleeve, said means for applying rotational torque to said shank including a thrust nut threadedly engaged with said shank and means for axially displacing and rotating said thrust nut proportionately to longitudinal shifting of said shank relative to said sleeve and with the axial to angular displacement ratio of said nut relative to said sleeve being greater than the corresponding ratio determined by the threaded engagement of said nut with said shank.

4,309,139

SELF-LOCKING FASTENING DEVICE

Isoji Nakae, Wakayama, Japan, assignor to Kishu Neji Co., Ltd., Osaka, Japan

Filed Mar. 6, 1980, Ser. No. 127,977
Claims priority, application Japan, Jul. 29, 1979, 54-104723
Int. Cl.³ F16B *39/282*
U.S. Cl. 411—187 **11 Claims**



1. A fastening device comprising:

a body having a rotational axis, an engaging surface and threads concentric with said axis;

said engaging surface having formed therein and extending therefrom a plurality of ratchet-like projections having a sawtooth-type circumferential cross section;

each said projection including a first radially outer edge and a second radially inner edge which together define a leading point which forms a most prominent portion of said projection;

all of said leading points facing in the direction of loosening of the fastening device;

each said first edge of each said projection extending along a respective first tangent line of a plurality of first tangent lines which extend from an inner periphery to an outer periphery of said engaging surface in directions tangentially inclined with respect to the radial;

each said second edge of each said projection extending along a respective second tangent line of a plurality of second tangent lines which extend from said inner periphery to said outer periphery of said engaging surface in directions tangentially inclined with respect to the radial and in a direction of inclination opposite to that of said first tangent lines; and

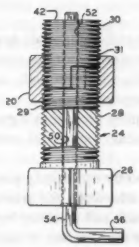
said first tangent lines and said second tangent lines being spaced at regular intervals such that each said first tangent line intersects a plurality of said second tangent lines, and such that each said second tangent line intersects a plurality of said first tangent lines, thereby forming a plurality of said leading points along each said tangent line between said inner and outer peripheries of said engaging surface.

4,309,140

SELF-LOCKING THREADED FASTENER AND UNLOCKING TOOL COMBINATION

Robert G. Steffen, Bluffton; David L. Gregory, Craigville, both of Ind., and LeVone A. Blough, 111 Horseshoe Dr., Maitland, Fla. 32751, assignors to LeVone A. Blough, Rocky Mount, N.C.

Filed Oct. 3, 1979, Ser. No. 81,399
Int. Cl.³ F16B *39/02, 39/38*
U.S. Cl. 411—264 **4 Claims**



1. A self-locking threaded fastener combination which includes a bolt assembly and a nut-like element comprising first and second threaded shank parts in end-to-end relation adapted to be conjointly threaded into said element, an axial keyway having a predetermined polygonal cross section extending through one shank part and at least partially through the other shank part, a key having a corresponding cross-sectional shape slidably received by said keyway for turning said shank parts in unison in said nut-like element, the adjacent ends of said shank parts having stepped end portions, each step including transverse surfaces, the transverse portions on the first shank part being connected by a pair of axially extending radial faces which if extended would join substantially on the axis of said first shank part, said radial faces forming an obtuse angle therebetween of less than 180°, said transverse portions on said second shank part being joined together by third and fourth axially extending radial faces which if extended would join substantially on the axis of the second shank part, said third and fourth radial faces forming an obtuse angle therebetween of less than 180°, the threads of said shank parts being continuous and aligned when the radial faces thereon are in predetermined spaced relation and said keyways in said shank parts are in

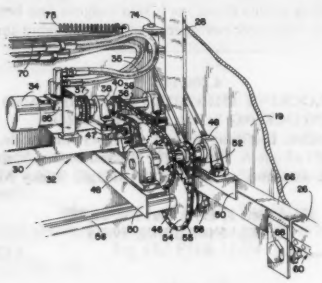
alignment whereby said nut-like element may be threadingly rotated thereon in either direction, said nut-like element locking on the threads of said shank parts when said key is removed, said keyways are misaligned and said radial faces in relative positions other than in said predetermined spaced relation.

4,309,141

REFUSE-EXTRUDER-AND-COMPACTOR APPARATUS

Gerhardt Van Drie, 724 W. Pine Ave., El Segundo, Calif. 90245

Filed Dec. 14, 1979, Ser. No. 103,510
Int. Cl.³ B65F *3/28*
U.S. Cl. 414—509 **4 Claims**



1. A refuse-extruder-and-compactor apparatus adapted to be located with a waste-material-storage container having at least two opposing side walls, a bottom wall, and an open discharge end, the apparatus comprising:

a pusher-blade assembly including a pusher blade vertically positioned for linear reciprocal movement within said container;

a track means defined by oppositely positioned rail members mounted to said side walls for movably supporting said blade assembly, each rail member being positioned longitudinally along the mid-section of said side walls, whereby said blade assembly is evenly balanced therebetween in vertical relation to said bottom wall of said container;

means for moving said blade assembly in a linear reciprocal manner along said track means, said means being supported and mounted to said blade assembly wherein said means for moving said blade assembly comprises:

a motor means mounted intermediate the upper and lower ends of said blade assembly;

a drive assembly operably connected to said motor means; and

a rack-and-pinion assembly attached adjacent said track means, whereby said drive assembly is adapted to operate said pinion to provide rectilinear motion to said blade assembly; and

a guide means provided between said blade assembly and said track means thereof and comprising:

a pair of guide-arm members secured to said blade assembly and extending rearwardly of said blade, and adapted to be slidably supported by respective rail members; and

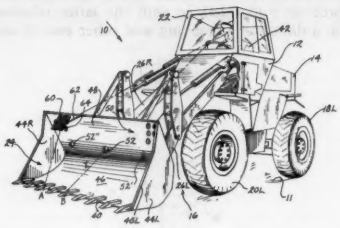
a guide sprocket attached to said guide-arm members and positioned for engagement with said rack rearwardly of said respective pinions, said rack being affixed to said rail along the full length thereof.

4,309,142

SEE-THROUGH BUCKET

John F. Shumaker, Mt. Pleasant, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Apr. 16, 1980, Ser. No. 140,808
Int. Cl.³ E02F *3/81*
U.S. Cl. 414—722 **2 Claims**



1. A material-handling element used with a mobile material-handling machine having an operator's control cab, comprising:

a body portion including a pair of sidewalls and wall means, interconnecting said sidewalls, for forming a material-receiving channel, said wall means defining a transversely disposed digging edge; and

means joined to at least one of said sidewalls and wall means, for joining said body portion to said machine, said wall forming means being interposed between said digging edge and said control cab with said body portion in a first position relative to said machine,

said wall forming means defining at least one aperture adjacent one of said sidewalls located in the line-of-sight between the operator stationed in said cab and said digging edge with said body portion in said first position, and a mirror joined to said body portion and aligned to the plane of said at least one aperture at an acute angle whereby the operator stationed in said cab and looking in the direction of said at least one aperture and mirror sees a portion of said digging edge out of the line of sight passing through said at least one aperture, whereby said operator can accurately position said body portion in said first position using said digging edge as a guide.

4,309,143

VANE-DISK TYPE TURBOMOLECULAR PUMP AND ETCHING METHOD OF MANUFACTURE OF VANE DISKS

Karl-Heinz Klatt, Jülich-Stetternich, and Eckard Küssel, Düren, both of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich GmbH, Jülich, Fed. Rep. of Germany

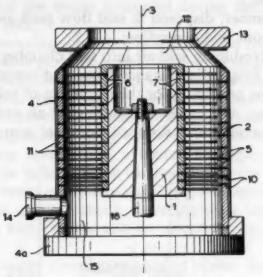
Continuation of Ser. No. 855,380, Nov. 28, 1977, abandoned. This application Feb. 27, 1980, Ser. No. 124,973
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1976, 2654055
Int. Cl.³ F01D *1/36*
U.S. Cl. 415—90 **16 Claims**

1. A turbomolecular pump comprising a turbine rotor and a turbine stator, each carrying a series of arrays or radial turbine vanes disposed one behind the other in axial alignment, the vane arrays of the rotor being interleaved with the fixed vane arrays of the stator which are each connected fast to an annular stator disk, further having the improvement which consists in that:

the rotor disks (**6,6*a***) and the stator disks (**10,10*a***) consists of a metallic material having a ratio of tensile strength to specific weight greater than 17×10^3 m and a modulus of elasticity greater than 10×10^3kp/mm^2; and

each array of rotor vanes is integral with and of the same

thickness as the rotor disk, being etched-formed therefrom, the vanes of the array being twisted about a substantially radial axis so that their broad surfaces are at an angle of set that is constant for each array.



4,309,144

AXIAL THRUST BEARING

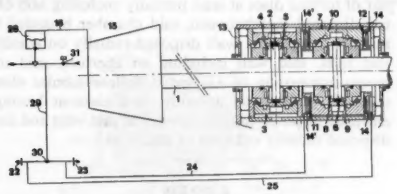
Jean Eggmann, and Max Hartmann, both of Baden, Switzerland, assignors to BBC Brown, Boveri & Company, Ltd., Baden, Switzerland

Filed Aug. 10, 1979, Ser. No. 63,693

Claims priority, application Switzerland, Aug. 4, 1978, 8333/78

Int. Cl.³ F01D *3/04*

U.S. Cl. 415—105 **3 Claims**



1. An apparatus for absorbing an axial thrust exerted on a rotating shaft in a fluid-flow engine, the shaft being provided with a first thrust bearing which is located rigidly with respect to an axial direction of the shaft and which interacts with a first shaft thrust plate, said apparatus comprising:

at least a second shaft thrust plate;

at least a second thrust bearing which interacts with said second shaft thrust plate, said second thrust bearing including a first and a second bearing element, such that said bearing elements are displaceable in the axial direction relative to the first shaft thrust plate;

at least one thrust arrangement which counteracts the axial thrust on said bearing elements, said at least one thrust arrangement being controlled as a function of the axial thrust such that when the axial thrust changes, a thrust compensating force exerted by the at least one thrust arrangement varies accordingly; and

wherein the fluid-flow engine is provided with a pressure tapping which is subject to the working medium and which is connected via a first line to at least one controllable throttle valve which throttle valve is connected on an outlet side via a second line to an outlet orifice, said outlet orifice leading into the open atmosphere and permitting a small flow of pressure medium from the pressure tapping through said at least one throttle valve, said outlet orifice having an orifice with a sufficiently small cross-section so that, in said second line connecting said outlet side of said at least one throttle valve to said outlet orifice, a superatmospheric pressure can be set, said pressure being transmitted via a third line into an interior of said at least one thrust arrangement to provide a thrust compensation.

4,309,145

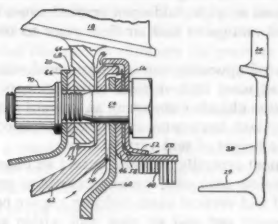
COOLING AIR SEAL

Olivo L. Viola, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Oct. 30, 1978, Ser. No. 956,121

Int. Cl.³ F01D *11/00*

U.S. Cl. 415—170 R **7 Claims**



1. In a gas turbine engine including:

a mainstream gas flow path;

a rotor comprising a rotor disk for receiving the roots of a plurality of rotor blades, said rotor blades extending generally radially into the mainstream gas flow path;

a stator assembly comprising a plurality of stator blades extending generally radially into the mainstream gas flow path;

an improved sealing means preventing high temperature mainstream gas from directly impinging upon the interface of the rotor blade roots and the rotor disk only during periods of maximum engine output power operation or rapid increases in engine output power and comprising:

(i) a flange axially extending from the root of each rotor blade and cooperating with flanges on adjacent blades to define an annular arrangement thereof; and

(ii) a sealing member attached to the stator assembly and being movable axially aft and radially outwardly and into engagement with said flanges on said blades by thermal expansion of said stator assembly in response to temperature increases during said periods, for thereby engaging said flanges on said rotor blades and forming a seal therewith, and being movable out of such engagement upon thermal contraction of said stator assembly in response to temperature decreases,

wherein said sealing means further includes an axially oriented leg on said sealing member and a thermal shield attached to the stator assembly, said shield being positioned between the sealing member and the mainstream gas flow and including a portion engaging said axially oriented leg on said sealing member for restraining movement of said axially oriented leg of the sealing member.

4,309,146

AMPLIFIED WIND TURBINE APPARATUS

Leopold A. Hein, Fayetteville, Tenn., and William N. Myers, Huntsville, Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 12, 1980, Ser. No. 129,780

Int. Cl.³ F03D *1/04*

U.S. Cl. 415—2 R **4 Claims**

1. Wind powered turbine apparatus having amplified wind effects comprising:

a housing;

a wind turbine rotatably carried in said housing having a plurality of turbine blades;

a first air inlet carried by said housing through which a first

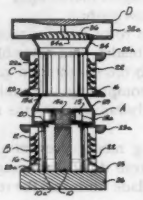
ambient air flow is admitted for conveyance to said wind turbine;

an air pre-rotation chamber carried by said housing and disposed in series air flow between said air flow inlet and said wind turbine;

a plurality of pivotable curved vertical vane elements carried about pivots circumferentially spaced about said air pre-rotation chamber, said vanes being selectively opened and closed to define an air pipe within said chamber through which said air flows, said vane elements being opened on a side fronting the prevaling ambient winds and closed on an opposing back side thereof forming a curved wall of said air pipe, said open vertical vanes imparting a rotational motion to said air flow prior to reaching said turbine;

a plurality of upwardly curved horizontal vane elements carried adjacent said vertical vane elements of said air pre-rotation chamber imparting an upward motion to said air flow; said horizontal vanes being spaced vertically along the height of said vertical vanes;

a core element centrally disposed in said air chamber immediately below said wind turbine extending generally the height of said vertical vanes defining a space between said core element and said air pipe wall within said air pre-rotation chamber, said air vanes rotating said air around



and about said core imparting centrifugal force to said air flow creating a low pressure profile adjacent said core and a high pressure profile adjacent said wall of said air pre-rotation chamber;

said turbine blade having tips being disposed generally above said space defined in said air pre-rotation chamber, the wind forces of said high pressure profile being applied to said tips of said turbine blades at the outlet of said air pipe for more efficient utilization of said wind;

a second air rotation chamber carried by said housing adjacent the opposite side of said wind turbine;

a second air inlet carried by said housing for admitting a second ambient air flow to said second air rotation chamber;

said second air rotation chamber including a second plurality of pivotable vertical vane members having pivots circumferentially spaced around said second air rotation chamber and being selectively opened for imparting rotation to said second air flow creating a low pressure profile in said second air rotation chamber accelerating air flow across said wind turbine; and

draft anti-interference means carried by said housing downstream of said air rotation chamber adjacent an outlet of said wind turbine for releasing interference between air leaving the turbine and outside ambient wind flow across said outlet.

4,309,147

FOREIGN PARTICLE SEPARATOR

Walter E. Koster, Topsfield; William E. Ludke, Lynn, and Frank A. Lastrina, Andover, all of Mass., assignors to General Electric Company, Lynn, Mass.

Filed May 21, 1979, Ser. No. 41,217

Int. Cl.³ F01D *5/18*

U.S. Cl. 416—95 **4 Claims**

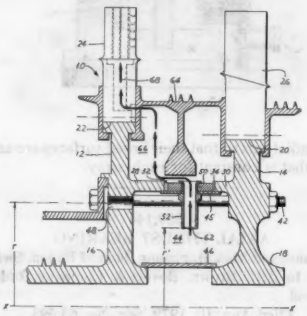
1. In a system for cooling a blade associated with a gas turbine engine wherein said blade is adapted to rotate about an engine centerline, the invention comprising:

a flow path receiving pressurized air and delivering said air to said blade;

a rotating chamber, disposed in said flow path and adapted to rotate about said centerline;

an inlet for introducing said air into said chamber, said inlet disposed at first radial distance from said centerline;

an outlet means providing for the discharge of said air from said chamber, said outlet means having an entrance disposed at a second radial distance from said centerline, said



second radial distance being less than said first radial distance thereby utilizing centrifugal force to generally prevent foreign particles in said air from entering said outlet means; and

a pair of turbine discs at least partially enclosing said chamber disposed therebetween, said chamber bounded by a radially outer most wall disposed radially outwardly of said inlet, said wall including an aperture, said outlet means comprising an elongated hollow tubular element mounted within said aperture, said element having an entrance disposed radially inward of said inlet and an exit disposed radially outward of said inlet.

4,309,148

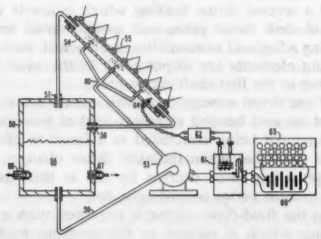
PULSING STEAM SOLAR WATER PUMP

Louis R. O'Hare, 1700 Banyan #2, Fort Collins, Colo. 80526

Filed Dec. 7, 1979, Ser. No. 101,218

Int. Cl.³ F04B *49/00, 19/24*

U.S. Cl. 417—18 **9 Claims**



1. A solar heated, steam driven water pump comprising:

An alternating steam pressurization and vacuum production means comprising a portion of a cavity which portion being capable of being strongly heated and then cooled in such a manner that during the heated period this heated part of the cavity is able firstly to receive a flow of water from another part of the same cavity, the pressure for said water delivery from one to the other part of said cavity being a low pressure relative to the absolute pressures

periodically produced within the cavity, and secondly to convert the water to steam pressure because of the enclosure of the cavity and during the cooled period that same part of the cavity is able to provide a vacuum by condensation of the steam produced during the former heated period and,

Steam generating chamber heating means and,

Low pressure periodic water circulating means consisting of water receiving and water impelling means in the form of a chamber that is another part of the same cavity used for pressurization and vacuum formation, said receiving and impelling means being a chamber capable of alternately receiving water from a source through a check valve under the influence of a vacuum within the cavity and said cavity being capable of expelling subsequently that water through another check valve during a steam generation period when steam acts to place pressure on the water and,

Internal water circulation means in the form of a pump within the cavity by which means a small quantity of that water received into the cavity is moved to the steam generation chamber,

Internal water circulation control means by which the intermittent flow of the internal water circulation means is first initiated when steam generating temperature is reached in the steam generating chamber and is interrupted when the temperature lowers to the point of condensation.

4,309,149

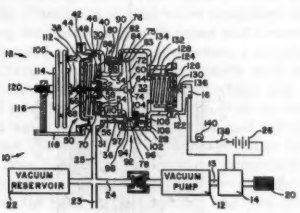
VACUUM PUMP SWITCH

Howard L. McCombs, Jr., South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 6, 1980, Ser. No. 127,681

Int. Cl.³ F04B *49/00*

U.S. Cl. 417—63 **11 Claims**



1. A control member comprising:

a housing having a first chamber connected to a second chamber by a bore and a passage, said first chamber being connected to a reservoir containing a fluid, said second chamber being connected to the surrounding environment through a port;

a first wall in said first chamber;

a second wall in said bore;

linkage means for connecting said first wall with said second wall, said linking means extending into said second chamber;

a first valve connected to said linkage means and aligned with said port for controlling communication between the surrounding environment and said second chamber;

a second valve connected to said linkage means and aligned with said passage for controlling communication between said first and second chambers;

first resilient means for urging said first wall away from said second chamber to bring said second valve into engagement with said housing to seal said passage and disengage said first valve from said port to allow air to flow into said second chamber, said fluid in the reservoir and first chamber creating a pressure differential across said first and second walls with air in the surrounding environment and second chamber, respectively, said pressure differential creating a first force for urging said first movable wall toward said second chamber and a second force in said second wall which with the first resilient means opposes said first force;

a third wall in said second chamber; and

second resilient means for moving said third wall to activate a switch connected to a device that effects a pressure change in the fluid in said reservoir, said pressure change producing a corresponding change in said pressure differential which allows the resulting first force to overcome said first resilient means and resulting second force to move the first and second walls toward the second chamber and sequentially close said first valve and open said second valve, said reservoir fluid being communicated to said second chamber to eliminate the pressure differential across said second wall and thereafter allow the first force to move the first and second walls toward the second chamber in opposition to said first resilient means while a pressure differential is created across said third wall to develop a third force which overcomes said second resilient means and moves said third wall to deactivate said switch and thereby interrupt the effect of the device on the fluid in the reservoir.

4,309,150

PERISTALTIC MOTORS

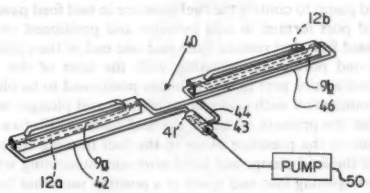
Barrett M. M. Payne, 21 Portland Dr., Umhlanga Rocks, Natal, South Africa

Filed Nov. 13, 1979, Ser. No. 93,773

Claims priority, application South Africa, Oct. 20, 1978, 78/5923

Int. Cl.³ F04B *9/10, 35/02*

U.S. Cl. 417—229 **4 Claims**



1. A prime mover comprising first and second, resiliently deformable compression chambers which are arranged to be progressively deformed by a weighted roller movable thereover in a given direction, a piston located in the bore of a cylinder, a fluid line connecting the respective ends of the first and second chambers, respectively corresponding to the end of travel of the roller in each chamber in said given direction, the other ends of the chambers being connected to the cylinder by means of fluid lines leading one to each side of the piston which is associated with means to utilise its movement.

4,309,151

LIQUID FUEL INJECTION PUMPING APPARATUS

John Craven, Whitstable, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Mar. 24, 1980, Ser. No. 133,248

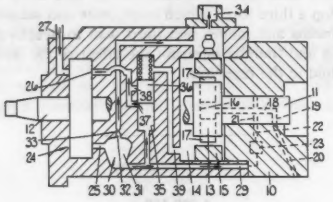
Claims priority, application United Kingdom, May 3, 1979, 15519/79

Int. Cl.³ F04B *23/12*

U.S. Cl. 417—206 **7 Claims**

1. A liquid fuel injection pumping apparatus for supplying

fuel to an internal combustion engine comprising a housing, a rotary distributor member located in the housing and arranged in use, to be driven in timed relationship with an associated engine, an annular cam ring surrounding the distributor member and located within a space defined in the housing, pumping plungers carried by the distributor member which are actuated by cam lobes on the cam ring as the distributor member rotates, to deliver fuel through passage means in the distributor member and housing to outlet ports in turn, a feed passage in the housing through which fuel under pressure can be supplied to effect outward movement of the pump plungers after actuation by the cam lobes, a fuel inlet in the housing, a positive displacement fuel feed pump having an inlet connected to said fuel inlet and an outlet which is connected to said feed passage, a pressure control valve for controlling the pressure of fuel in said feed passage, an air separator provided intermediate the outlet of the feed pump and said feed passage whereby in use air entrained in the fuel leaving the outlet of the feed pump is



separated from the fuel, said pressure control valve comprising a spring-loaded plunger contained within a cylinder, one end of said cylinder being connected to said feed passage whereby the pressure of fuel in said feed passage will act on said plunger in opposition to the force exerted by the spring, a first port in the wall of the cylinder and which is uncovered by said plunger when the pressure in the feed passage reaches a predetermined value, said first port communicating with the inlet of said feed pump to control the fuel pressure in said feed passage, a second port formed in said cylinder and positioned on the side of said first port remote from said one end of the cylinder, said second port communicating with the inlet of the feed pump, and a third port in said cylinder positioned to be placed in communication with said second port by said plunger in the event that the pressure of fuel in the feed passage falls to a low value due to the presence of air in the fuel flowing from the outlet of the feed pump, said third port communicating with a feed port opening into said space at a position such that fuel in said space can be drawn to the inlet of the feed pump.

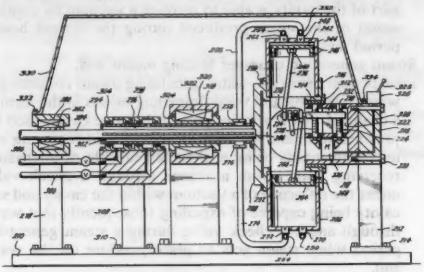
4,309,152

HYDRAULIC MOTOR/PUMP WITH VARIABLE MECHANICAL ADVANTAGE

Glenn E. Hagen, New Orleans, La., assignor to Sea Energy Corporation, New Orleans, La.

Filed Sep. 6, 1979, Ser. No. 72,987
Int. Cl.³ F04B *1/06*
U.S. Cl. 417—218 **3 Claims**

1. An apparatus including an expandable chamber device which is capable of being operated as a hydraulic motor or pump attached by a reciprocating connecting rod to a crankshaft which includes an adjustment means to alter the distance between the point at which the connecting rod engages the crankshaft and the center of rotation of the expandable chamber device, said adjustment means comprising at least one screw which threadably, movably, orthogonally engages a portion of said crankshaft, said screw being operably connected to a remote controlled prime mover capable of reversibly rotating said screw in such a manner as to position said crankshaft at a distance between the point at which said crankshaft engages said connecting rod and the center of rotation of the expandable chamber device which said hydraulic motor or pump is operating, the improvement comprising:



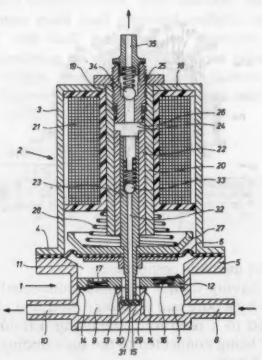
said adjustment means including at least one bearing shaft closely, slidably engaging the interior of an opening in a portion of said crankshaft.

4,309,153

ELECTROMAGNETIC FUEL DELIVERY AND METERING PUMP

Karl Panick, Planegg, and Joseph Glass, Ottobrunn, both of Fed. Rep. of Germany, assignors to Webasto-Werk W. Baier GmbH & Co., Munich, Fed. Rep. of Germany

Filed Jul. 18, 1979, Ser. No. 58,622
Claims priority, application Fed. Rep. of Germany, Jul. 18, 1978, 2831437
Int. Cl.³ F04B *3/00, 17/04*
U.S. Cl. 417—252 **7 Claims**

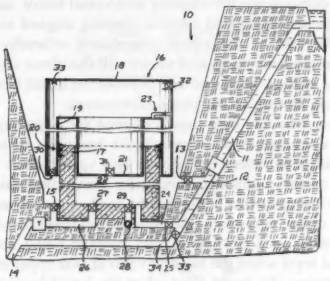


1. Electromagnetic fuel delivery pump, comprising a diaphragm pump that delivers in excess and a metering piston pump, said pumps having working chambers and means enabling interconnection thereof when the diaphragm pump executes a delivery stroke and the metering piston pump executes a suction stroke, said metering piston pump having a piston formed with an extension that is connected with an armature plate of an electromagnet and with a diaphragm of the diaphragm pump, said extension extending through said diaphragm into the working chamber of the diaphragm pump, the interconnection means comprising a bore within which a suction valve is disposed that penetrates lengthwise through the piston and its extension so as to open into the working chamber of the diaphragm pump, and a common return spring being provided for executing the delivery stroke of the diaphragm pump and the suction stroke of the piston metering pump, said return spring bearing on said armature plate.

4,309,154
PUMPS OPERATED BY THE RISE AND FALL OF WATER

Francis E. Daddario, 15 Fowler La., Falmouth, Mass. 02450

Continuation of Ser. No. 861,686, Dec. 19, 1977, abandoned.
This application Dec. 10, 1979, Ser. No. 102,221
Int. Cl.[3] F04B *17/00*
U.S. Cl. 417—337 4 Claims



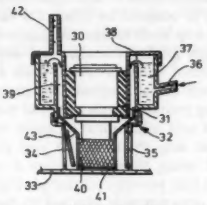
1. A pumping system to be operated by flowing water from an elevated source, said system including at least one pump, said pump including a piston and a fixed cylinder establishing a vertically expansible chamber, said piston including a float, a reservoir in which the pump is located, a first valve controlled delivery conduit communicating between the reservoir and the elevated source of flowing water to thereby enable the reservoir to be flooded in order to raise the float from a first position and expand said chamber, a valve controlled discharge conduit communicating the bottom of the reservoir with a lower level conduit to affect drainage thereof and thereby lower the float and contract the chamber, a second valve controlled delivery conduit entering the bottom of the chamber and communicating with the elevated source of flowing water, a second valve controlled discharge conduit in communication with the bottom of said chamber and connected to a turbine, said valves being operated to admit water into the reservoir to raise said float and admit water into the chamber, then said valves being operated to drain the reservoir and discharge water from the chamber, said float further including valve controlled means operable to admit ballast water when the reservoir is flooded in order to increase the head on the chamber, and then drain said ballast water when the float is in said first position.

4,309,155
VEHICLE FUEL TANK HAVING VENTED INTERNAL FUEL PUMP

Otto Heinz, Wolfsburg; Helmut Hoppmann, and Bodo Henning, both of Brunswick, all of Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Division of Ser. No. 909,698, May 25, 1978, Pat. No. 4,212,600.
This application Feb. 11, 1980, Ser. No. 120,500
Int. Cl.[3] F04B *17/00;* F01D *5/10;* B65D *87/44*
U.S. Cl. 417—360 2 Claims

1. A fuel pump assembly for mounting within a vehicle fuel tank comprising a reserve tank which is arranged to stand essentially perpendicularly on the bottom of said fuel tank and which is equipped with valve means for allowing the influx of and preventing the outflow of fuel, a fuel pump having an inlet and mounted within said reserve tank by at least one noise dampening cylindrical intermediate layer, a filter screen mounted to said reserve tank, surrounding said pump inlet and forming an intake chamber, a vent conduit sealed against fluid entry from said fuel tank and a vent channel bypassing said intermediate layer and connecting said intake chamber upstream of said pump inlet with said vent conduit, and a first annular chamber surrounding said intermediate layer which comprises a fuel return chamber into which excess fuel output of said pump is provided, said first annular chamber being

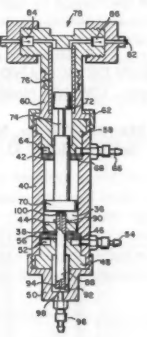


connected to said vent conduit and said vent channel, and said excess fuel being returned to said intake chamber by said vent channel.

4,309,156
FLUID ACTIVATED PUMP HAVING VARIABLE DISCHARGE

Winfried Gonner, and Bernhard Huber, both of Uberlingen, Fed. Rep. of Germany, assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Nov. 23, 1979, Ser. No. 96,869
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1979, 2911443
Int. Cl.[3] F04B *35/02;* F15B *15/24*
U.S. Cl. 417—403 5 Claims



1. A fluid activated pump having variable discharge volume comprising:

a pump cylinder means, a pump piston slidably disposed within said pump cylinder, and a pump cylinder porting means allowing external communication with a portion of the interior of said pump cylinder means;

a displacement adjustment cylinder means, a displacement adjustment piston disposed within said adjustment cylinder means and slidable therein between a first position and a second position, and an adjustment cylinder porting means allowing external communication with a portion of the interior of said adjustment cylinder means, said adjustment porting means being a single port through which fluid both inflows and outflows;

a power cylinder means coaxially positioned between said pump cylinder means and said adjustment cylinder means, a power piston slidably disposed within said power cylinder means, and a power cylinder porting means allowing external communication with a portion of the interior of said power cylinder means, said power cylinder means being provided with a first fixed stop means for limiting the motion of said power piston toward said pump cylinder means, said power cylinder means and said adjustment

cylinder means are different sections of a single, continuous cylinder sleeve;

a connection shaft coupling said pump piston and said power piston;

stop shaft means coupled to said adjustment piston so that an end thereof is adapted to contact a face of said power piston, said stop shaft means being provided with an axial bore sealingly guided through said adjustment piston, a first end thereof being provided with a first stop for engaging a face of said adjustment piston, a second end thereof being provided with a second stop for engaging an extension of said adjustment cylinder to limit the movement of said stop shaft toward said power piston, said second end being disposed within a pressure chamber upon which said power cylinder port opens; and

power piston return means adapted to displace said power piston toward said stop shaft, said power piston return means includes a power piston return port through which a pressurized fluid may enter said power cylinder means on a side of said power piston opposing that of said power cylinder port, whereby providing a fluid pressure at said return port causes said power piston to be urged toward said adjustment cylinder;

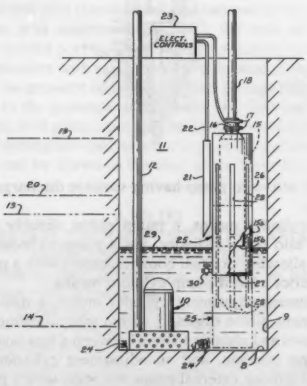
whereby a transient fluid pressure applied to said power cylinder port means causes said power piston to be first displaced toward and then away from said pump cylinder, thus causing said pump piston to have a discharge and then an intake stroke, and whereby a fluid pressure applied to said adjustment cylinder porting means causes said adjustment piston to move to said second position and thus, through the agency of said stop shaft, shorten the stroke of said power piston and reduce the volume of fluid drawn into and discharged by said pump piston.

4,309,157

PROTECTION DEVICE AND SUMP PUMP

Karl O. Niedermeyer, 17WO68 North St., Bensenville, Ill. 60106

Filed Mar. 1, 1979, Ser. No. 16,295
Int. Cl.³ H01H *35/18*
U.S. Cl. 417—421 **9 Claims**



1. The combination of a protection device and a sump pump apparatus or the like, said pump apparatus being positioned in a liquid-containing sump in which there is a fixed component such as the walls of the sump, in which sump variations occur in the liquid level, the pump apparatus comprising a pump component suspended with its bottom above the bottom of the sump and control means to turn the pump component on after the liquid level has risen to a sufficiently high elevation to prime the pump component, said combination comprising:

a vessel having an interior opening extending downwardly from the top thereof, the horizontal dimensions of said opening being sufficiently large so that said vessel will fit about the bottom of the pump component, said vessel having a "water line" below the top of the vessel so that the vessel will float in the liquid in the sump, said vessel having a liquid passage from the exterior to the interior of the vessel with at least a portion of said passage being above said water line whereby with said vessel floating normally the liquid will not traverse said passage, said vessel forming at least part of said device; and

guide means engaging the vessel and for engaging a first of said components for aligning said vessel below said pump component with said interior opening aligned to receive the bottom of the pump component, whereby as said liquid level increases said vessel will rise about the bottom of the pump component and prevent the liquid from entering the bottom of the pump component;

said vessel having stop means aligned for engaging one of said components after said liquid has risen to an upper elevation sufficient to position said vessel about the bottom of the pump component for preventing said vessel from rising further with respect to the pump component, said upper elevation being below said sufficiently high elevation, said portion of said passage being above the liquid level when the liquid level is at said upper elevation and below the liquid level when the liquid level is at said sufficiently high elevation, whereby before said liquid reaches said sufficiently high elevation the liquid will flow through the passage and into the vessel causing the vessel to sink away from the bottom of the pump component whereupon the liquid can enter the pump component.

4,309,158

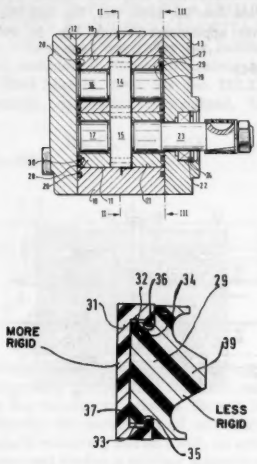
GEAR POSITIVE DISPLACEMENT MACHINE WITH U-SHAPED SUPPORTING ELEMENT FOR SEALING MEMBER

Kurt Grabow, Feucht; Willy Mahl, Ditzingen; Karl-Heinz Müller, Vaihingen; Heinrich Kochendörfer, Kernen; Dieter Bertsch, Neuhausen; Siegfried Mayer; Jörg Anhenn, both of Vaihingen, and Wilhelm Dworak, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 15, 1979, Ser. No. 84,793
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1978, 2847711
Int. Cl.³ F03C *2/08;* **F04C** *2/18, 15/00*
U.S. Cl. 418—132 **9 Claims**

1. A positive displacement gear machine, comprising a housing bounding an inner hollow; two rotatable gear members located in said hollow so as to cooperate with a working fluid and to subdivide said hollow into a low pressure zone and a high pressure zone, said gear members meshing with each other, each of said gear members having an axis, two axial end faces, and a shaft extending in opposite axial directions from said axial end faces; two pairs of bearing members located in said hollow of said housing, each pair of said bearing members being arranged to bear said shafts of both gear members at respective axial side of the latter, at least one pair of said bearing members abutting against one axial end face of both gear members under the action of pressure of the pressure zone; a sealing member bounding the pressure zone at one axial side of said gear members and having a shape substantially corresponding to the shape of number three, said sealing member having a cross-section including a base side and two recesses; and a supporting element having a shape corresponding to the shape of said sealing member and being constituted of a material which is more rigid than the material of the sealing member, said supporting element having a U-shaped cross-section which includes two arms each provided with a bead, each of said beads of said arms engaging in a respective one of said

recesses of said sealing element, and said sealing element being inserted into said supporting element by said base side of the



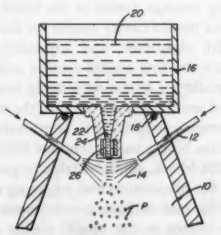
former, so that said supporting element reinforces said sealing element.

4,309,159

REFRACTORY NOZZLE

John F. Holic, Monaca, Pa., assignor to Crucible Inc., Pittsburgh, Pa.

Filed Jun. 5, 1980, Ser. No. 156,721
Int. Cl.[3] B22F 9/00
U.S. Cl. 425—7 5 Claims



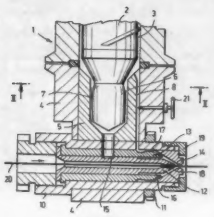
1. In an apparatus for producing powdered metal by gas atomization which apparatus includes a tundish for containing molten metal to be atomized, said tundish resting atop an atomizing chamber, a refractory nozzle depending from said tundish and extending into said atomizing chamber said nozzle having a longitudinal through passage, and at least one jet adapted to direct gas onto molten metal discharged from said nozzle passage and into said atomizing chamber to atomize said molten metal, the improvement comprising a metal sleeve fully encased within said refractory nozzle and surrounding a longitudinal portion of said nozzle passage nearer the end thereof extending into said atomizing chamber whereby said sleeve structurally reinforces said nozzle against failure due to thermal shock therein.

4,309,160

APPARATUS FOR FORMING FOAM-SKIN INSULATION ON TELEPHONE WIRES

Matti J. Poutanen, Helsinki, and Aarne Heino, Espoo, both of Finland, assignors to Oy Nokia AB, Helsinki, Finland

Filed May 9, 1980, Ser. No. 148,363
Claims priority, application Finland, May 11, 1979, 791512
Int. Cl.[3] B29D 27/00; B29F 3/10
U.S. Cl. 425—113 5 Claims



1. Extruder apparatus for forming a foam-skin insulation on a wire, the foam-skin insulation comprising an inner layer of foamed plastic insulation and an outer layer of solid plastic insulation, the apparatus comprising:

an extruder tool having a passage through which the wire is drawn, the tool also including—

an inner annular channel surrounding said passage for feeding the material for forming said inner layer of foamed insulation, and

an outer annular channel surrounding both said passage and said inner annular channel for feeding the material for forming said outer layer of solid insulation; and

an extruder head adapted to be connected to the discharge end of an extruder and to said extruder tool, the head including—

a portion defining an annular mixing space and having mixing means therein,

means for injecting a foaming agent into said mixing space, said mixing space leading to said inner annular channel for forming said inner insulating layer, and

a bypass channel extending from a position upstream of said means for injecting a foaming agent to said outer annular channel for forming the outer insulation layer on the inner layer.

4,309,161

APPARATUS FOR THE INJECTION MOLDING OF RADIAL ENDLESS TIRE-TREAD RINGS

Gerd Krebs; Rainer Friedrich, and Hans-Peter Saul, all of Hamburg, Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft Mit Beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed Sep. 9, 1980, Ser. No. 185,513
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1979, 2937402
Int. Cl.[3] B29C 5/04; B29F 1/00; B29C 6/00
U.S. Cl. 425—115 16 Claims

1. An apparatus for the forming of tread rings, e.g. for pneumatic tires, comprising:

an elastic mandrel of substantially incompressible material having a generally cylindrical portion for widening of a belt thereon;

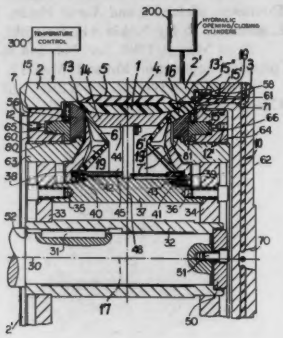
at least two shells adapted to enclose said mandrel and defining a mold cavity therewith;

means for injecting an elastomer into said cavity; and

a metal ring-shaped backing member supporting said mandrel,

said backing member and said mandrel being mounted upon a

core, said core being formed with a pair of annular cylinders provided with respective cones engaging opposite sides of said



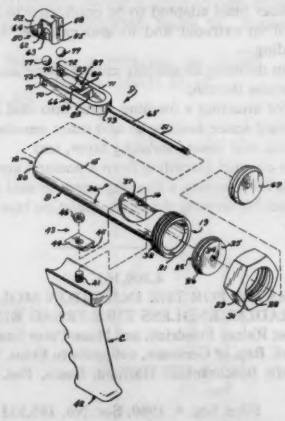
mandrel for sealing said sides of said mandrel against said shells.

4,309,162

ICE CREAM DISPENSER

Frank W. Parker, 311 Stoneybrook Dr., Lexington, Ky. 40503

Filed Sep. 24, 1980, Ser. No. 190,538
Int. Cl.³ B29C *1/00*; B29D *3/00*
U.S. Cl. 425—126 S **11 Claims**



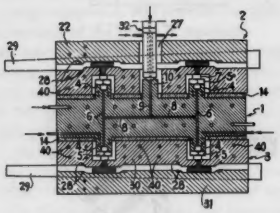
1. An ice cream dispenser including elongated barrel means having an open muzzle end and defining an elongated chamber for receiving and forming ice cream into a bar-like configuration therewithin by insertion of the open muzzle end thereof into bulk ice cream, handle means for facilitating manipulation of said ice cream dispenser, and plunger means operable for reciprocal movement through said chamber, in one direction for filling of said chamber with ice cream, and in the other direction for ejection of a bar of ice cream therefrom, said plunger means including detainment means mounted thereon for receiving and positioning a stick within said chamber in juxtaposition so that one end thereof extends within the ice cream received by said chamber during and on formation thereof as an ice cream bar and with the other end of such stick extendant outwardly from the thus formed bar of ice cream.

4,309,163

MOULD ASSEMBLY FOR MOULDING ELASTOMERS

Gerard Cottancin, Lyons, France, assignor to Societe Lyonnaise de Ventilation Industrielle Solyvent-Ventec, Lyons, France

Filed Jun. 26, 1980, Ser. No. 163,352
Claims priority, application France, Jun. 26, 1979, 79 16391
Int. Cl.³ B29F *1/08*
U.S. Cl. 425—543 **13 Claims**



1. In a mould assembly for use with a press for the injection/compression moulding of elastomers and in particular for the moulding of high precision parts, the mould assembly comprising a centre block, first temperature regulating means in the block, elastomer injecting passage means in the block, at least one mould combined with a first side of the block and at least one second mould combined with a second side of the block opposed to said first side, each mould having a first mould section adjacent the block and a second mould section which is remote from the block and defines with the respective first mould section mould cavity means and a mould parting line, orifices in the first mould sections and communicating with said injecting passage means in the block and associated with the respective mould cavity means for feeding the mould cavity means with elastomer, and adjustable spacer means interposed between the first mould section and second mould section of each mould for adjusting spacing between each first section and second section in the course of the moulding operation; the improvement comprising in combination first projections rigid with the block and extending from said first and second sides of the block, small nozzles respectively detachably mounted on the projections and engaging said first mould sections and putting said orifices in communication with said injecting passage means in the block, means combined with each small nozzle for controlling the flow of elastomer through the respective small nozzle, second temperature regulating means in said projections and third temperature regulating means in said nozzles, said first, second and third temperature regulating means being independent of one another and having separate ends for connection to separate temperature regulating sources, means for compensating for difference between the expansion of the block and the expansion of the two moulds, a second projection extending from said first side of the block and defining an inlet passage communicating with said injecting passage means in the block, a feed nozzle associated with said second projection for connection to an injecting element of said press so that the elastomer can be fed from said injecting element to said inlet passage, and fourth temperature regulating means combined with said feed nozzle associated with said second projection.

4,309,164

WORKING MACHINE, PARTICULARY AN INJECTION-MOLDING MACHINE HAVING A MOTIVE SYSTEM WHICH PRODUCES A SEQUENCE OF REGULARLY RECURRENT INERTIA FORCES

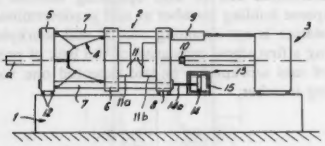
Caspar Egger, Glarus, and Rudolf Krebser, Schübelbach, both of Switzerland, assignors to Netstal-Maschinen AG, Switzerland

Filed May 21, 1980, Ser. No. 152,124

Claims priority, application Switzerland, May 31, 1979, 5063/79

Int. Cl.[3] B29F *1/00*

U.S. Cl. 425—589 4 Claims



1. A working machine, particularly an injection molding machine, comprising a support, a machine part mounted on said support for movement relative thereto in at least one direction whereby the movement of said machine part produces a regularly recurring inertia force, an actuator mounted on said support and having a moving actuator part connected to said machine part and being displaceable in a direction of the inertia force wherein said machine part includes a fixed mold part and a movable mold part with means for moving said movable mold part toward and away from said fixed mold part, said movement of said movable mold part producing an inertia force in one direction, said actuator being connected to said fixed mold part to produce a force on the mold part in a direction opposite to but equal in magnitude to the inertia force.

4,309,165

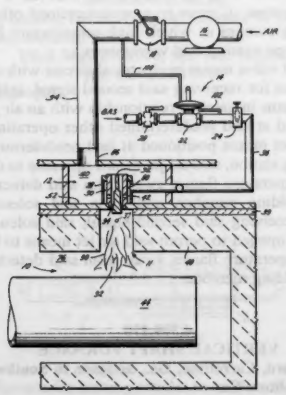
HIGH VELOCITY COMBUSTION FURNACE AND BURNER

James G. McElroy, 175 Timbermill, Woodlands, Tex. 77380

Filed Apr. 18, 1979, Ser. No. 31,333

Int. Cl.[3] F23C *5/08*

U.S. Cl. 431—8 31 Claims



1. A burner for burning gas from a gas supply with air from an air source capable of placing the air under pressure in the range of ¼ inch water column to over 100 pounds per square inch, comprising:

an air manifold connected to the air supply;

a gas manifold housed within said air manifold, said gas manifold having means for communicating with the gas supply;

an air control orifice mounted within said gas manifold, said orifice having an inner chamber communicating with said air manifold and a plurality of ports therethrough; and

a diffuser mounted within said chamber creating a nozzle; said nozzle communicating outside said air manifold.

4,309,166

COMBUSTION FLASHBULB

Aloysius M. M. van Laarhoven, Tilburg, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 11, 1978, Ser. No. 967,939

Claims priority, application Netherlands, Dec. 23, 1977, 7714304; Jun. 19, 1978, 7806572

Int. Cl.[3] F21K *5/02;* H05B *43/02*

U.S. Cl. 431—358 10 Claims

1. A combustion flashbulb having a sealed vacuum-tight tubular light transmissive envelope which is filled with an oxidizing gas and contains a mass of finely shredded actinically combustible metal strips, in which spaced current conductors extend from the exterior through and into the envelope wherein each is in contact with the mass of metal strips, said flashbulb having means to ignite the flashbulb in response to the application of a voltage thereto, characterized in that the ignition means solely consisting of the current conductors and part of said mass, said part being in contact with the current conductors.

4,309,167

METHOD AND APPARATUS FOR INTRODUCING A CABLE INTO A VULCANIZATION CHAMBER

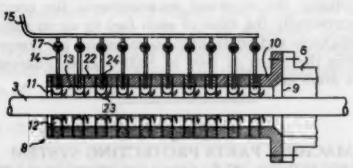
Rainer Kurz, Schattdorf, and Ruedi Walther, Altdorf, both of Switzerland, assignors to Dätwyler AG, Altdorf, Switzerland

Filed Jun. 16, 1980, Ser. No. 159,664

Claims priority, application Switzerland, May 16, 1979, 4656/79

Int. Cl.[3] F27B *3/22;* F27D *1/18;* F26B *25/00*

U.S. Cl. 432—22 21 Claims



1. A method for introducing cable into a vulcanization chamber, after leaving an extruder wherein a coating of uncured crosslinkable material is applied to the cable, the vulcanization chamber being spaced from the extruder, having an inlet opening and operating by the action of a heat transfer medium to crosslink the coating, comprising the steps of:

passing the cable through a plurality of annular inflatable sealing elements, axially aligned in series and together

forming a sealing tube connected to the inlet opening, each sealing element having a variable diameter opening; and,

surrounding the coated cable with a leakage flow of the heat transfer medium out of the vulcanization chamber and through each of the openings, by individually adjusting the diameter of each of the openings by inflating or deflating each of the sealing elements, thereby substantially preventing damaging contact between the uncured coated cable and the sealing elements.

4,309,168

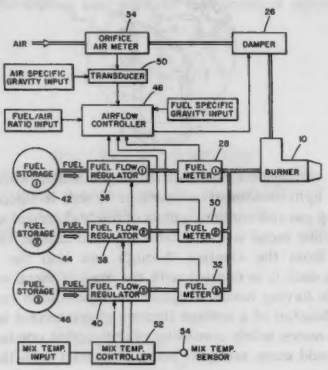
SYSTEM FOR COMBINING MULTIPLE FUELS TO PRODUCE CONTROLLABLE GAS TEMPERATURES IN ASPHALT DRUM MIXERS

Fredric W. Prill, North Aurora, and Lee V. Binz, Aurora, both of Ill., assignors to Barber-Greene Company, Aurora, Ill.

Continuation-in-part of Ser. No. 127,643, Mar. 6, 1980. This application Jul. 14, 1980, Ser. No. 167,816

Int. Cl.³ F27D *7/00*; F27B *9/40*

U.S. Cl. 432—24 **4 Claims**



1. A method for heating an asphalt-aggregate composition in a drum mixer by utilizing two or more fuels of different types to supply the burner, said method comprising the steps of:

(a) supplying combustion air to the burner of a drum mixer;

(b) measuring the mass flow rate of the air to the burner;

(c) supplying two or more fuels of different properties for combustion within the burner;

(d) measuring the mass flow rate of each of said fuels to said burner during combustion;

(e) mixing the air with each of said fuels in predetermined ratios;

(f) heating the asphalt by means of combustion gases produced by said burner; and

(g) utilizing the aforesaid measurements for controlling electronically the ratio of each fuel to air to maintain a predictable and controllable combustion gas temperature within the range of 1600 to 3200 degrees Fahrenheit in said drum mixer.

4,309,169

MACHINE PARTS PROTECTING SYSTEM

John Petro, Belleville, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

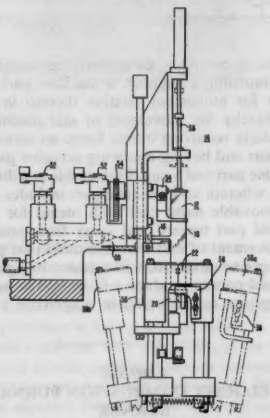
Filed Dec. 24, 1980, Ser. No. 219,712

Int. Cl.³ F24F *9/00*; F27D *7/00*

U.S. Cl. 432—64 **5 Claims**

1. A machine parts protecting system for protecting those parts of a machine that may be in close proximity to high temperature flames, said machine used for processing workpieces and comprising a plurality of workpiece holding members each mounted in spaced relationship from one another, a plurality of operating stations positioned proximate said workpiece holding members and operable to perform work on said workpieces, means for moving said workpiece holding members in a stop-and-go fashion so that each of said workpiece holding members is sequentially indexed from operating station to operating station, said machine operable to receive individual ones of said workpieces at one of said operating stations and to retain said received workpieces in said workpiece holding members for sequential indexing through succeeding operating stations, said machine parts protecting system comprising:

(a) a photo-detection and signaling means for detecting at a predetermined one of said operating stations that the workpiece holding member at said predetermined operation station is not retaining one of said workpieces and sending a first signal indicative of the lack of presence of one of said workpieces in said detected one workpiece holding member;



(b) memory means in electrical circuit with said photo-detecting and signaling means for receiving said first signal and sending a second signal upon said detected workpiece holding member being indexed a predetermined number of times to a predetermined other of said operating stations at which high temperature flames are used for processing said workpieces;

(c) solenoid valve means in electrical circuit with said memory means for receiving said second signal, said solenoid valve means in gaseous relationship with an air jet means positioned at said predetermined other operating station, said air jet means positioned at said predetermined other operating station, said air jet means operable to direct said high temperature flames away from said detected workpiece holding member, and upon said solenoid valve means receiving said second signal, said solenoid valve means is opened to permit said air jet means to blow said high temperature flames away from said detected workpiece holding member.

4,309,170

VERTICAL SHAFT FURNACE

George C. Ward, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

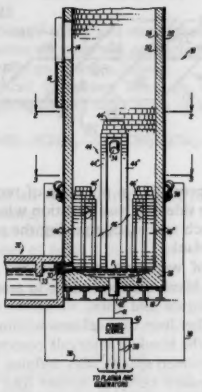
Division of Ser. No. 967,679, Dec. 8, 1978, abandoned, which is a continuation of Ser. No. 812,291, Jul. 1, 1977, Pat. No. 4,129,742. This application Mar. 6, 1980, Ser. No. 127,684

Int. Cl.³ F27D *1/08*; C21B *7/08*

U.S. Cl. 432—96 **5 Claims**

1. In a vertical shaft furnace for melting metal materials of the type having a vertically elongated melting chamber

through which metal descends during use of the furnace, including means defining an inlet opening at the upper portion of said melting chamber for charging metal into said melting chamber; means defining an outlet opening at the lower portion of said melting chamber for discharging molten metal therefrom; and a plurality of heat-producing means disposed in at least two vertically-spaced rows about the circumference of said melting chamber between said inlet and outlet openings for producing sufficient heat energy to effect melting of metal



charged into the furnace inlet opening to form a continuously descending metal column terminating in a pool of molten metal at the lowermost portion of said melting chamber for discharge from the furnace outlet opening,

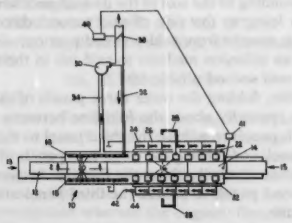
the improvement comprising at least three circumferentially spaced-apart heat-producing means in each row, and the lowermost row of heat-producing means being vertically spaced from the lower-most portion of said melting chamber a distance approximately equal to the inner diameter of said melting chamber.

4,309,171

BILLET HEATING FURNACE WITH PRESSURIZED ENTRANCE SEAL

Charles B. Gentry, Belmont, Mich., assignor to Granco Equipment, Inc., Belding, Mich.

Filed May 27, 1980, Ser. No. 153,050
Int. Cl.³ F27B *3/04*
U.S. Cl. 432—163 **18 Claims**



1. In a furnace for heating articles to an elevated temperature wherein the articles are moved serially from an entrance end of the furnace to an exit end thereof comprising:

a preheater section at an entrance end of the furnace and a heating chamber at an exit end thereof;

means in said heating chamber for directing combustible gases against the articles therein;

means for providing turbulent gas flow along the length of said preheater section;

exhaust means for drawing the exhaust gases of said combustible gases from the furnace;

said exhaust means drawing said exhaust gases from said heating chamber to said preheater section;

means for pressurizing said exhaust gases;

means for communicating said pressurized exhaust gases with said means providing turbulent gas flow;

the improvement which comprises:

means in said preheater section defining first and second chambers therein, said first chamber extending from the entrance end of the furnace along a portion of the length of said preheater section and said second chamber extending from said first chamber to said heating chamber; and

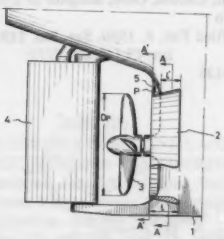
means for maintaining said first chamber at a first pressure greater than atmospheric pressure with pressurized exhaust gases provided within said preheater section and said second chamber at a lower pressure relative to said first pressure.

4,309,172

SHIP WITH IMPROVED STERN STRUCTURE

Hitoshi Narita, Musashino; Yoshikuni Kunitake, Yachiyo, and Hikaru Yagi, Wakabayashi, all of Japan, assignors to Mitsui Engineering & Shipbuilding Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 846,830, Oct. 31, 1977, abandoned, which is a continuation of Ser. No. 713,620, Aug. 11, 1976, abandoned. This application Jul. 9, 1979, Ser. No. 56,145
Claims priority, application Japan, Aug. 14, 1975, 50-98954
Int. Cl.³ B63H *5/14*
U.S. Cl. 440—67 **13 Claims**



1. A ship comprising a main hull having a stern narrower at the bottom than at the top, a ring-shaped construction defining a continuous smooth-walled passage directly connected to the main hull on each side of the stern, thereby guiding a wake to a propeller, said propeller being mounted rearward of said construction, with a space between the rear portion of said construction and said propeller blades, said construction being directly connected in such a manner that, at the point of direction connection, at least 20% of its minimum longitudinal length is fixed to the stern of said hull such that a portion of the hull extends within said passage, said construction being within a range of:

$$l=0.2\ D_P \text{ to } l=D_P$$

wherein l is a longitudinal length of said construction and D_P is a diameter of the propeller, said construction having an inner diameter which is between 60% and 150% of the diameter of the propeller, wherein said construction is longitudinally longer at the upper portion thereof than the lower portion, and a longitudinal cross-section of said construction is wing-shaped with an inner substantially convex surface, thereby increasing the width of the upper cross-sectional area from which water is drawn through said ring-shaped construction.

4,309,173

OARLOCK FOR INFLATABLE BOAT

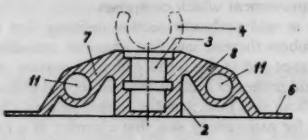
Edmond Leber, Buhl, France, assignor to Sevylor, Paris, France

Continuation of Ser. No. 835,190, Sep. 21, 1977, abandoned. This application May 25, 1979, Ser. No. 42,575

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1976, 7629668[U]

Int. Cl.³ B63H 16/06

U.S. Cl. 440—109 3 Claims



1. A rowlock fitting for inflatable boats comprising, a sole adhereable on an inflatable boat having an integral, flexible peripheral flange, two rigid, upstanding, reinforcing ribs centrally located on a same side of said sole integral therewith and of same material as said sole and said flange, said flange extending peripherally of said ribs said ribs intersecting substantially normal to each other and defining an enlarged area of integral juncture having a central recess, a rigid socket in said recess for an oarlock at said area of juncture constituting a region of intersection of the two ribs, said region of intersection peripherally and axially completely enclosing said rigid socket, and said rigid ribs extending radially from said socket, each of said ribs having a hole transverse thereof, and said flange and said ribs are integral and made of a thermoplastic material.

4,309,174

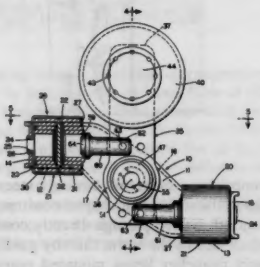
BELT TENSIONER CONSTRUCTION

Nolte V. Sproul, Canton, Ohio, assignor to Dyneer Corporation, Canton, Ohio

Filed Feb. 8, 1980, Ser. No. 119,999

Int. Cl.³ F16H 7/12

U.S. Cl. 474—135 10 Claims



1. A belt tensioner construction for tensioning an endless drive belt of a drive system for vehicle accessories, said tensioner construction including:

(a) bracket means adapted to be mounted on a vehicle engine adjacent the drive belt;

(b) lever means pivotally mounted on the bracket means and movable in a belt tensioning direction;

(c) spring means mounted on the bracket means and operatively engageable with the lever means biasing the lever means in a belt tensioning direction, said spring means including two pairs of volute springs, each pair being mounted on an opposite end of the bracket means and operatively engageable with the lever means, with said lever means being pivotally mounted on the bracket means intermediate of the spring pairs; and

(d) rotatable pulley means mounted on the lever means and movable toward tensioning engagement with the drive belt upon pivotal movement of the lever means by the spring means.

4,309,175

METHOD OF MAKING CARTON SPACE DIVIDERS

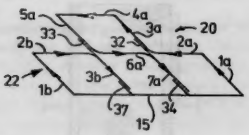
Thomas J. Martin, Vancouver, Canada, assignor to MacMillan Bloedel Limited, Vancouver, Canada

Division of Ser. No. 43,751, May 30, 1979, Pat. No. 4,226,357. This application May 13, 1980, Ser. No. 149,439

Claims priority, application Canada, Mar. 5, 1979, 322764

Int. Cl.³ B31B 1/26

U.S. Cl. 493—92 5 Claims



1. A method of providing a plurality of rectangular partitioned spaces to one side of a base partition which has a length equal to three of such spaces, comprising the steps:

providing a flat blank,

providing lines of weakness at either end of an internal portion of said blank corresponding to said base partition length, to constitute fold lines,

providing six further lines of weakness within one remaining end portion of the blank at intervals corresponding to the size of the partitioned spaces, thus defining in said one end portion seven panels between further fold lines,

providing two additional lines of weakness within the other remaining end portion of the blank at intervals corresponding to the size of the partitioned spaces, thus defining in said other end portion three panels between additional fold lines,

providing, in the sixth panel of said one end portion counting out from said internal portion, a tab adjacent the fold line between the sixth and seventh panels, the tab being stiff with respect to the seventh panel,

providing, in the second panel of said other end portion counting out from said internal portion, a tab adjacent the fold line between the second and third panels, the tab being stiff with respect to the third panel,

providing a first pliable tab within said internal portion, said first pliable tab being adjacent a first theoretical line spaced in from said one end portion by a distance corresponding to the size of the desired partitioned spaces, the tab lying to the side of said first theoretical line which is remote from said one end portion,

providing a second pliable tab within said internal portion, said second pliable tab being adjacent a second theoretical line spaced in from said other end portion by a distance corresponding to the size of the desired partitioned spaces, the tab lying to the side of said second theoretical line which is remote from said one end portion,

applying an adhesion medium to said tab in the sixth panel and to said second pliable tab,

in any order, folding the outer three panels of said one end portion inwardly about the fold line between the fourth and fifth panels to adhere the third panel to the tab in the sixth panel, and folding the outer two panels of said other end portion inwardly about the fold line between the first and second panels to adhere the third panel to the second pliable tab,

applying an adhesion medium to the first pliable tab and to the back of the tab in the second panel of the other end portion, which latter will now be reversed through folding,

and folding the entire said one end portion inwardly about the fold line separating it from the said internal portion, to adhere the back of the fifth panel to the back of the tab in the second panel of said other end portion, and to adhere the back of the seventh panel to the first pliable tab.

4,309,176

PROCESS FOR THE OILING AND IMPREGNATION OF LEATHER AND PELTS

Hans-Herbert Friese, Monheim; Jürgen Plapper, Hilden; Uwe Ploog, Haan, and Emil Ruscheinsky, Leverkusen, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Sep. 10, 1980, Ser. No. 185,605

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1979, 2939741

Int. Cl.[3] C14C *9/02*

U.S. Cl. 8—94.23 6 Claims

1. In the process of oiling and impregnating leather or pelts wherein the leather or pelts are contacted with one or more oiling substances in an aqueous liquor,

the improvement comprises using an alkylolamide ether sulfate or phosphate of fatty acids of the formula

$$R—CO—NH—(CH_2)_n—O—(CH_2—CH_2—O)_mX$$

wherein

R represents an aliphatic radical of from about 13 to 19 carbon atoms;

n is a number of from 2 to 4;

m is a number of from 1 to 4;

X is $—SO_3Y$ or $—PO(OY)_2$; and

Y is a sodium, potassium, or ammonium anion

as an oiling substance in the liquor bath.

4,309,177

METHOD AND SOLUTION FOR THE ROOM TEMPERATURE DYEING OF NYLON

James W. Kane, Kent, and Richard J. La Conte, Auburn, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 31, 1979, Ser. No. 108,444

Int. Cl.[3] D06P *1/39, 1/653*

U.S. Cl. 8—516 9 Claims

1. An improved method for color dyeing nylon articles and the like utilizing a room temperature dye solution, comprising the steps of:

applying an aqueous dye solution consisting essentially of an acid dye and 30%–60% formic acid by volume to the area of the nylon article to be colored whereby acceptable color density is achieved in one to three minutes, and without a fixing step, rinsing said article with water.

4,309,178

PROCESS FOR ISOLATING SULPHUR DYESTUFFS FROM AQUEOUS CRUDE MELTS CONTAINING SODIUM POLYSULPHIDE

Georg Daniek, Frankfurt am Main; Artur Meyer, Schöneck, and Wolf Weidemüller, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Oct. 17, 1980, Ser. No. 197,814

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1979, 2942591

Int. Cl.[3] C09B *49/00*

U.S. Cl. 8—551 7 Claims

1. In the process for isolating solid sulphur dyestuffs from crude sulphur dyestuff melts, the improvement comprises adding 10^{-4} to 1% by weight, relative to the amount of dyestuff, of an organic flocculating auxiliary to the crude dyestuff melt to produce a filterable dyestuff precipitate and then separating said precipitate wherein the organic flocculating auxiliary is a polymer or copolymer containing monomeric units selected from the group consisting of acrylic acid, methacrylic acid, alkali acrylate, alkali methacrylate, acrylamide, methacrylamide, amino alkyl acrylate having 2 to 4 alkyl carbon atoms, amino alkyl methacrylate having 2 to 4 alkyl carbon atoms, N-methylamino alkyl acrylate having 2 to 4 alkyl carbon atoms, N-dimethylamino alkyl acrylate having 2 to 4 alkyl carbon atoms, N-methylamino alkyl methacrylate having 2 to 4 alkyl carbon atoms, quaternized amino alkyl acrylate having 2 to 4 alkyl carbon atoms, quaternized amino alkyl methacrylate having 2 to 4 alkyl carbon atoms, quaternized N-methylamino alkyl acrylate having 2 to 4 alkyl carbon atoms, quaternized N-dimethylamino alkyl acrylate having 2 to 4 alkyl carbon atoms, quaternized N-methylamino alkyl methacrylate having 2 to 4 alkyl carbon atoms, quaternized N-dimethyl alkyl methacrylate having 2 to 4 alkyl carbon atoms, ethylene oxide, ethylene imine and their saponification products.

4,309,179

FLEXOGRAPHIC PRINTING ON TEXTILES

Arthur R. Heuser, Rock Hill, S.C., and Richard Bolstad, Bronx, N.Y., assignors to Inmont Corporation, Clifton, N.J.

Filed Jul. 24, 1980, Ser. No. 171,777

Int. Cl.[3] C09B *67/00*

U.S. Cl. 8—558 10 Claims

1. An aqueous ink for printing on textiles by the flexographic printing method, said ink consisting essentially of:

(a) 9 to 35% of water soluble components consisting of (1) water soluble acrylic resin binder and (2) water soluble thermosetting melamine aminoplast;

(b) 5 to 16% of finely divided water insoluble carboxylated elastomer polymer binder, incorporated into said ink as a latex,

(c) 1 to 12% of colored pigment and

(d) water

wherein the total solids of said ink is 20 to 50%, and the ink has a viscosity of about 3 to 15 poises at infinite shear.

4,309,180

ANTHRAQUINONE COMPOUNDS AND THE PRODUCTION AND USE THEREOF

Roger Lacroix, Huningue; Jean-Marie Adam, Saint-Louis, both of France, and Janos Vincze, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

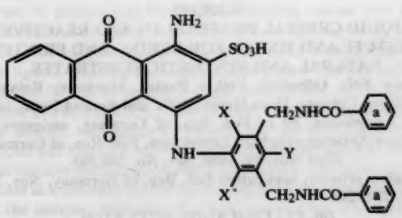
Continuation of Ser. No. 963,627, Nov. 24, 1978, abandoned. This application Jul. 1, 1980, Ser. No. 166,277

Claims priority, application Luxembourg, Nov. 28, 1977, 78597

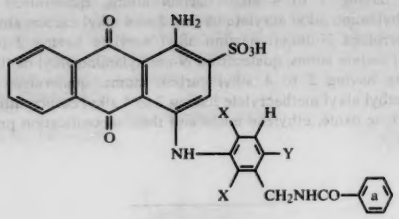
Int. Cl.[3] C09B *1/24;* C07C *143/665;* C09B *1/34, 1/52*

U.S. Cl. 8—609 13 Claims

1. A dye solution containing a solvent mixture of one or more aprotic solvents, at least one glycol and/or glycol ether and a dye mixture consisting of 55 to 75 percent by weight of the anthraquinone dyestuff, the free acid formula thereof being



and of 45 to 25 percent by weight of the anthraquinone dyestuff, the free acid formula thereof being



wherein the X's independently of one another are each a straight-chain or branched-chain alkyl group having 1 to 4 carbon atoms, Y is hydrogen or is the same as X, and wherein the rings are phenyl rings or halogen substituted phenyl rings.

4,309,181

α-HYDRAZONO α-PHENYL ACETONITRILES, THEIR PREPARATION AND THEIR APPLICATION AS DISPERSED DYESTUFFS FOR THE COLORATION OF ARTIFICIAL OR SYNTHETIC MATERIALS

Manfred C. Rau, Thuit-Anger par Amfreville la Campagne, France, assignor to Produits Chimiques Ugine Kuhlmann, Courbevoie, France

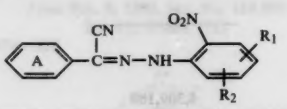
Filed Dec. 31, 1979, Ser. No. 108,255

Claims priority, application France, Jan. 19, 1979, 79 01328

Int. Cl.³ D06P 1/00; C07C 121/78

U.S. Cl. 8—636 **23 Claims**

1. An α-hydrazono α-phenyl acetonitrile of the formula:



(I)

in which R_1 represents hydrogen, halogen, nitro, trifluoromethyl, alkyl or alkoxy, R_2 represents hydrogen, halogen or cyano, and the benzene nucleus A carries 1 to 3 identical or different substituents selected from halogen, trifluoromethyl, alkyl, alkoxy and $—NR_3R_4$, R_3 representing alkyl or substituted alkyl and R_4 representing hydrogen, alkyl or substituted alkyl.

23. The process for the coloration of artificial or synthetic materials which comprises applying to said materials as dispersed dyestuff the compound according to claim 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 or 13.

4,309,182

LIQUID CRYSTAL PHASE OF AN AZO REACTIVE DYESTUFF AND ITS USE FOR DYEING AND PRINTING NATURAL AND SYNTHETIC SUBSTRATES

Jochen Koll, Odenthal; Volker Paulat, Monheim; Reinhold Hörnle, Cologne; Hans-Heinz Mölls, and Konrad Nonn, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

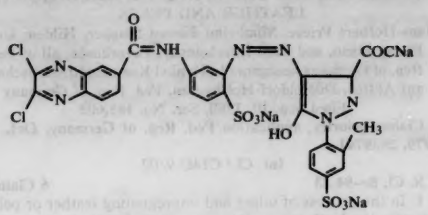
Filed Nov. 19, 1980, Ser. No. 208,595

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1979, 2948293

Int. Cl.³ C09B 67/00, 62/32, 62/24

U.S. Cl. 8—527 **2 Claims**

1. Lyotropic liquid crystal phase of the dyestuff of the formula



which is present in water in a concentration of 23–35% at room temperature.

4,309,183

LIQUID CRYSTAL PHASE OF AN AZO REACTIVE DYESTUFF AND ITS USE FOR DYEING AND PRINTING NATURAL AND SYNTHETIC SUBSTRATES

Jochen Koll, Odenthal; Volker Paulat, Monheim; Reinhold Hörnle, Cologne; Hans-Heinz Mölls, and Konrad Nonn, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

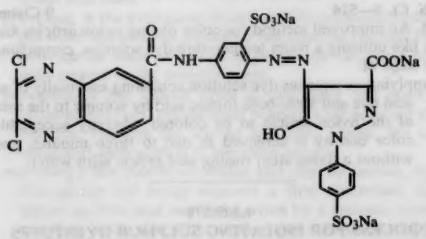
Filed Nov. 19, 1980, Ser. No. 208,592

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1979, 2948291

Int. Cl.³ C09B 67/00, 62/32, 62/24

U.S. Cl. 8—527 **2 Claims**

1. Lyotropic liquid crystal phase of the dyestuff of the formula



present in water in a concentration of 12–35% at room temperature.

4,309,184

METHOD OF DETERMINING FOOD OR CHEMICAL ALLERGY AND INTOLERANCE

Majid Ali, 19 Edgemont Pl., Teaneck, N.J. 07666

Filed May 8, 1980, Ser. No. 147,845

Int. Cl.³ G01N 33/50, 33/96

U.S. Cl. 23—230 B **10 Claims**

1. A method of determining a food or chemical allergy or intolerance in a human individual comprising:

(a) incubating a suspension of the individual's polymorphonuclear leukocytes with the food or the chemical suspected of causing an allergy or intolerance;

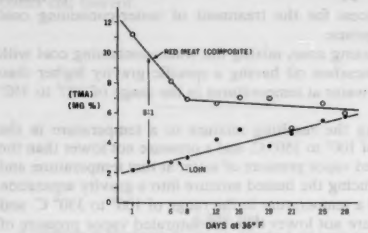
(b) assaying the supernatant of said suspension for an intracellular constituent of said leukocytes, said constituent being released to the supernatant due to lysis of the leukocytes in a positive test; and

(c) comparing the results of step (b) with the results of an assay of a second suspension of the individual's leukocytes which is unchallenged by the given food or chemical.

4,309,185
CHEMICAL ANALYSIS FOR QUALITY DETERMINATION OF TUNA

Frank J. Simon, San Marcos, and Wilfred B. Slater, Carlsbad, both of Calif., assignors to Ralston Purina Company, St. Louis, Mo.

Filed Feb. 12, 1979, Ser. No. 11,241
Int. Cl.³ G01N *33/12*
U.S. Cl. 23—230 R 4 Claims



1. A method of determining the spoilage of fish comprising measuring the quantitative distribution of trimethylamine from the dark meat to the light meat of fish, placing the results of said measurement in the form of a ratio of the amount of trimethylamine in dark meat to the amount of trimethylamine in light meat, which is corrected for the total mass of the fish, said ratio

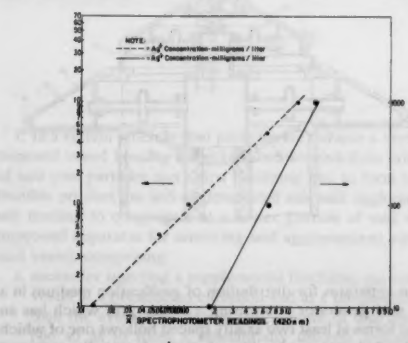
$$\frac{L}{L+R,}$$

wherein L equals the amount of trimethylamine in the white or light meat of the fish and R equals the amount of trimethylamine in the red or dark meat of fish.

4,309,186
HYDROPHILIC FILM FOR DETECTION OF HEAVY METALS

John E. Kiefer, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,371
Int. Cl.³ C08L *1/12*; G01N *21/78, 33/20*
U.S. Cl. 23—230 R 23 Claims

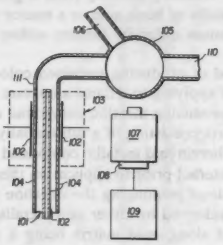


18. In a method of detecting heavy metals in an aqueous solution wherein said aqueous solution contacts a film for indicating the presence of said heavy metals, the improvement comprising using a film having a dispersion of finely precipitated zinc sulfide therein, said film being transparent and becoming discolored when indicating the presence of heavy metals, the extent of such discoloration also indicating the measurement of concentration of such heavy metals.

4,309,187
METASTABLE ENERGY TRANSFER FOR ANALYTICAL LUMINESCENCE

William B. Dodge, III, Waynesboro, and Ralph O. Allen, Charlottesville, both of Va., assignors to University of Virginia Alumni Patents Foundation, Charlottesville, Va.

Filed Oct. 25, 1979, Ser. No. 88,122
Int. Cl.³ G01N *21/60*
U.S. Cl. 23—232 E 20 Claims



1. A method for analysis of atomic species which comprises directly forming metastable energy level molecular nitrogen by processing a stream of nitrogen containing gas through a dielectric field wherein said nitrogen is excited to a level of 6.1 to 9.7 e.v. and wherein essentially no excited species above the 6th vibrational level of the $B^3\ \pi g$ energy state of molecular nitrogen is formed, and essentially no nitrogen atoms or ions are formed, admixing said excited nitrogen with a gas stream suspected of containing said atomic species to be analyzed whereby the energy level of said species is raised sufficiently to enable a fluorescent emmission as the energy level of said excited species decays to its lower energy state, detecting and analyzing the spectrum of said fluoresecent radiation to determine the identity and concentration of said element.

4,309,188
METHOD FOR THE CLINICAL SEPARATION OF α- AND β-LIPOPROTEINS

Craig L. Bentzen, Onex, Switzerland, assignor to Symphar S.A., Geneva, Switzerland

Filed Mar. 17, 1980, Ser. No. 130,625
Claims priority, application United Kingdom, Oct. 22, 1979, 36573/79
Int. Cl.³ G01N *33/92*
U.S. Cl. 23—230 B 13 Claims

1. A method for the clinical separation of α-lipoproteins from β-lipoproteins and for the determination of the ratio of α-lipoproteins to β-lipoproteins in serum or plasma free from added divalent cations, comprising introducing a sample of serum or plasma free from added divalent cations into a microcolumn containing heparin bound to agarose so as to remove from said sample the β-lipoproteins by binding thereof to this ligand, washing the microcolumn with a first pH-buffered solution free from added divalent cations and collecting the eluant as a first fraction containing the α-lipoprotein portion of the sample, subsequently washing the microcolumn with a second pH-buffered solution free from added divalent cations that releases the ligand-bound β-lipoproteins and collecting the eluant as a second fraction containing the β-lipoprotein portion of the sample, analyzing the first fraction for α-lipoprotein, analyzing the second fraction for β-lipoprotein, and using said analyses to calculate the ratio of α-lipoproteins and β-lipoproteins in said sample.

4,309,189

METHOD AND MEANS FOR PRODUCING SUSTAINED COLORED FLAMES

Bruce J. Oberhardt, 405-4 Bercado Cir., Mishawaka, Ind. 46544

Filed Jul. 31, 1980, Ser. No. 174,006
Int. Cl.[3] C10L *9/08, 10/00*
U.S. Cl. 44—4 3 Claims

1. A flame colorant consisting of a mixture of a color producing agent and a matrix, said color producing agent including at least one metallic compound, said matrix being a substantially low-volatile, non-combustible substance capable of prolonging the duration of flame coloration over that achieved by either of said agent or said matrix alone, and said matrix is a material of low volatility selected from a group of the class consisting essentially of boric acid or a source thereof, barium chloride, magnesium chloride, lithium sulfate and aluminum sulfate.

2. The method of producing sustained colored flames of a fire consisting of applying to a flame a mixture consisting of at least one color producing metallic compound and at least one matrix, said matrix consisting of a substantially non-combustible substance, wherein said metallic compound and said matrix are mixed and interact prior to application thereof to produce a mixture capable of prolonging the duration of flame coloration over that achieved by either said metallic compound or said matrix used along, said matrix being a material which consists of at least one of the following: boric acid or a source thereof, barium chloride, magnesium chloride, lithium sulfate, and aluminum sulfate.

4,309,190

PROCESS OF PRODUCING COAL BRIQUETTES FOR GASIFICATION OR DEVOLATILIZATION

Gerhard Baron, Hofheim; Dieter Sauter, Nidderau, and Wolfgang Sindel, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Metallgesellschaft AG, Frankfurt, Fed. Rep. of Germany

Filed Oct. 6, 1980, Ser. No. 193,994
Claims priority, application Fed. Rep. of Germany, Oct. 11, 1979, 2941301
Int. Cl.[3] C10L *5/48, 5/12, 5/16*
U.S. Cl. 44—16 R 5 Claims

1. A process of producing coal briquettes to be gasified or devolatilized in a fixed fuel bed which comprises adding 10 to 30 percent by weight of ash to coal and forming a mixture therefrom, said mixture having a particle size below 0.2 mm, said coal containing water not in excess of 20 percent by weight, briquetting said mixture at a temperature in the range of 20° to 100° C. by applying a pressure of at least 750 kg/cm^2.

3. A process according to claim 1, wherein the mixture to be briquetted contains 0.5 to 5% by weight of tar or pitch.

4,309,191

COAL-OIL MIXTURE

Osamu Hiroya; Hiroyuki Ihara, both of Yokohama, and Yoshitomo Sanami, Kamakura, all of Japan, assignors to Mitsubishi Oil Co., Ltd., Tokyo, Japan

Filed Sep. 5, 1980, Ser. No. 184,566
Claims priority, application Japan, Sep. 5, 1979, 54/112785; Sep. 5, 1979, 54/112786
Int. Cl.[3] C10L *1/32*
U.S. Cl. 44—51 17 Claims

1. A coal-oil mixture comprising pulverized coal dispersed in hydrocarbon oil containing olefinic hydrocarbons having at least 8 carbon atoms in an amount of at least 5% by volume, based on the total volumes of the hydrocarbon oil and the olefin.

4,309,192

TREATMENT OF WATER-CONTAINING COAL

Isao Kubo, Tokyo; Shigemi Nagayoshi, Hikari; Futao Sakata, Tokyo; Tetsuo Wada, Aoba, and Shoichi Oi, Ogawa, all of Japan, assignors to Mitsui Mining Co. Ltd. and Mitsui Coke Co. Ltd., both of Tokyo, Japan

Filed Jun. 27, 1980, Ser. No. 163,905
Claims priority, application Japan, Jul. 20, 1979, 54/91662; Jul. 20, 1979, 54/91663; Aug. 22, 1979, 54/105928
Int. Cl.[3] C10L *1/32*
U.S. Cl. 44—51 13 Claims

1. A process for the treatment of water-containing coal which comprises:

(a) in a mixing zone, mixing the water-containing coal with a hydrocarbon oil having a specific gravity higher than that of water at temperatures in the range of 100° to 350° C.;

(b) heating the resulting mixture to a temperature in the range of 100° to 350° C. and a pressure not lower than the saturated vapor pressure of water at that temperature; and

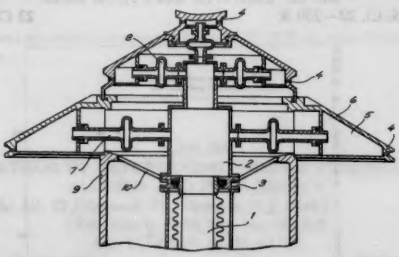
(c) introducing the heated mixture into a gravity separation zone at a temperature in the range of 100° to 350° C. and a pressure not lower than the saturated vapor pressure of water at that temperature, whereby the water separated from the water-containing coal is withdrawn from an upper section of the gravity separation zone and the mixture consisting of the dehydrated coal and the hydrocarbon oil is withdrawn from a lower section of the gravity separation zone.

4,309,193

APPARATUS FOR INPUT AND DISTRIBUTION OF GASIFICATION MEDIUM IN A ROTARY GRID GENERATOR

Erich Girodi, Hoyerswerda; Gerhard Richter, Spremberg; Berthold Neumann, Hoyerswerda; Peter Jaschke, Ossling; Johannes Slabik, Hoyerswerda; Roland Weber, Hoyerswerda; Andrea Schmidt, Hoyerswerda; Peter Krieg, Hoyerswerda; Lutz Gröschel, Hoyerswerda; Joachim Heynisch, Tschernitz; Joachim Starke, Hoyerswerda; Dietrich Wienold, Hornow; Günter Scholz, and Eckehard Mönch, both of Hoyerswerda, all of German Democratic Rep., assignors to VEB Gaskombinat Schwarze Pumpe, Schwarze Pumpe, German Democratic Rep.

Filed Dec. 18, 1979, Ser. No. 104,907
Int. Cl.[3] C10J *3/72*
U.S. Cl. 48—66 4 Claims



1. An apparatus for distribution of gasification medium in a rotary grid generator comprising a rotary grid which has an axis and forms at least two axially spaced hollows one of which is subdivided into a plurality of circumferentially arranged distributing chambers provided with a first group of openings which communicate the interior of the one hollow with the exterior of the rotary grid through the distributing chambers, whereas the other of said hollows is provided with a second group of openings which communicate the interior of the other hollow with the exterior of the rotary grid directly, a rotatable

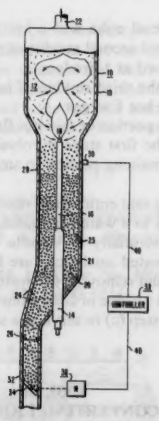
distribution head having an inlet for admitting gasification medium and a plurality of outlets for exiting the same, and a plurality of circumferentially spaced conduit members each having an inlet end communicating with a respective one of said outlets of said distribution head, and an outlet end communicating with a respective one of the distributing chambers of the one hollow of the rotary grid or with the other hollow of the latter, each of said conduit members having an elastic bellows-shaped portion arranged between the inlet end of the outlet end thereof.

4,309,194

PARTICLE WITHDRAWAL FROM FLUIDIZED BED SYSTEMS

Louis A. Salvador, Greensburg, Pa.; Ronald E. Andermann, Arlington Heights, Ill., and Lawrence K. Rath, Mt. Pleasant, Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 3, 1980, Ser. No. 156,000
Int. Cl.³ C10J 3/68
U.S. Cl. 48—76 **6 Claims**



1. In a system wherein coal particles are fed into a vertically disposed vessel housing a fluidized bed formed from injection of said coal particles and a first fluidizing gas, to form a combustible product gas and agglomerated ash, said agglomerated ash tending to congregate at a lower portion of said vessel, improved apparatus for removing said agglomerated ash from said vessel, comprising:

a. means for injecting a supplemental fluidizing gas into said vessel at a preselected elevation and at a temperature less than the average operating temperature of said fluidized bed so as to form a substantially discrete temperature interface region above said preselected elevation between said agglomerated ash and said fluidized bed;

b. temperature sensitive means for indicating the elevational position of said interface region; and

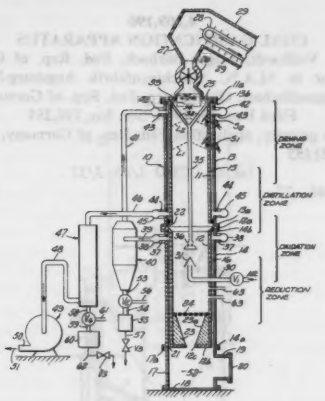
c. means responsive to the indication of said temperature sensitive means for selectively removing some of said agglomerated ash from said vessel.

4,309,195

APPARATUS FOR GASIFYING SOLID FUELS AND WASTES

Franz Rotter, Portland, Oreg., assignor to Energy Recovery Research Group, Inc., Portland, Oreg.

Filed Jun. 2, 1980, Ser. No. 155,514
Int. Cl.³ C10J 3/68
U.S. Cl. 48—76 **8 Claims**



1. Apparatus for effecting the high temperature gasification of solid organic feed materials having a fuel value into clean-burning and uniform gaseous fuels comprising:

(a) a gasification reactor vessel having an upper double-shell section including an inner shell element and an outer shell element and a lower double-shell section including an inner shell element and an outer shell element, the inner and outer shell elements of each reactor vessel section being affixed to one another at their upper peripheries with said inner shell elements of each section hanging freely within said outer shell elements, a solid material inlet at the upper end of said upper section, and a gas outlet at the lower end of said lower section, said reactor vessel sections defining a sequence of reaction zones from the material inlet to the gas outlet including drying, distillation, oxidation and reduction zones and confining a centrally disposed downwardly moving column of said solid feed materials within said zones, and said upper and lower double-shell sections defining with their respective inner and outer shell elements an upper annular shell space and a lower annular shell space;

(b) means for charging solid organic feed materials through said material inlet to continuously supply a downwardly moving column of said materials in said reactor;

(c) gas-feed means for admitting an oxygen-rich gas into said reaction vessel proximate the oxidation zone thereof so as to promote and sustain combustion of the column of organic materials passing therethrough;

(d) means connecting the gas outlet at the lower end of said lower reactor section with the lower end of the annular shell space of said lower section;

(e) means connecting the upper end of the annular shell space of the lower reactor section with the upper end of the annular shell space of the upper reactor section; and

(f) gas suction means in communication with the lower end of the annular shell space of the upper reactor section for sequentially drawing oxygen-rich gas into the reaction vessel through the gas-feed means, drawing reacting gases and vapors downwardly through the zones of the reactor vessel, and drawing gaseous fuel produced within said vessel outwardly through the gas outlet thence upwardly through the annular shell space of the lower reactor section in indirect counter-current heat exchange relationship

with the materials column portion in the reduction and oxidation zones within said vessel thence through the means connecting the upper end of the lower annular shell space with the upper end of the upper annular shell space and thence downwardly through the annular shell space of the upper reaction section in indirect co-current heat exchange relationship with the materials column portion in the drying and distillation zones of said vessel.

4,309,196

COAL GASIFICATION APPARATUS

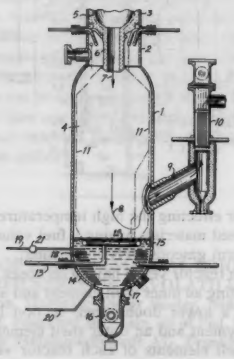
Frohmut Vollhardt, Siegen-Bürbach, Fed. Rep. of Germany, assignor to M.A.N. Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed Dec. 15, 1980, Ser. No. 216,251

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1979, 2951153

Int. Cl.³ C10J *3/48, 3/52*

U.S. Cl. 48—77 **8 Claims**



1. Apparatus for purification of synthesis gas produced by coal gasification comprising a coal gasification reactor, means defining a vertical gas distribution chamber which is internally pressurized, means for conducting synthesis gas from the coal gasification reactor into said distribution chamber, means in said distribution chamber for cooling said synthesis gas, gas take-off means opening into said gas distribution chamber extending at an angle thereto and being in communication with a serially connected waste heat boiler, coolant bath means contained in a lower portion of said gas distribution chamber located below said gas take-off means, and heat exchanger means formed by tubular coils arranged at the wall of said lower portion of said gas distribution chamber located within said lower portion containing said coolant bath and a control element operatively arranged in a line supplying heat exchanger medium to said heat exchanger.

4,309,197

METHOD FOR PROCESSING PULVERIZED SOLID FUEL

Zinovy F. Chukhanov, ulitsa Dmitria Ulyanova, 3, kv. 40; Zinovy Z. Chukhanov, ulitsa Obrucheva, 6, korpus 6, kv. 325; Sergei A. Tsuprov, B. Vuzovsky pereulok, 1, kv. 26; Vladimir I. Samsonov, Balaklavsky prospekt, 10, korpus 2, kv. 119, and Vadim A. Karasev, Leninsky prospekt, 16, kv. 30, all of Moscow, U.S.S.R.

Filed Sep. 13, 1979, Ser. No. 75,335

Int. Cl.³ C10J *3/46*

U.S. Cl. 48—197 R **5 Claims**

1. A method for processing a pulverized solid fuel, consisting essentially of:

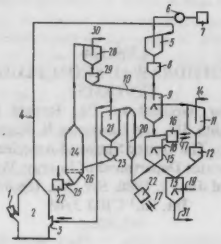
(a) drying said fuel with a hot gas introduced at a rate sufficient to form a gaseous suspension containing a dry particulate fuel fraction and a volatile moisture containing fuel fraction;

(b) separating and removing the entire volatile moisture containing fuel fraction from the gaseous suspension and feeding it to a power plant fuel supply, thereby leaving a residue of dry particulate fuel;

(c) subjecting the entire residue of dry particulate fuel to a first stage pyrolysis to form a first gas-vapor product, which is separated, removed and condensed, and a first residue of small coke;

(d) subjecting the entire first residue of small coke from step (c) to a second stage pyrolysis to form a gaseous product which is separated and removed, and a second residue of small coke;

(e) introducing a portion of the second residue of small coke from step (d) into a gas fired furnace and heating to a temperature of about 800°–1500° C. to form a third residue



of heated small coke and a hot flue gas; the remaining portion of said second residue of small coke from step (d) being removed as a product;

(f) separating the third residue of heated small coke in step (e) from the hot flue gas;

(g) recycling a portion of said hot flue gas, as a gaseous heat source, to the first stage pyrolysis in step (c), and recycling the remaining portion to step (a) to serve as the hot drying gas;

(h) introducing said entire third residue of heated small coke from step (f) to a water-gas gasifier wherein a suspension consisting essentially of volatile water-gas and a fourth residue of heated small coke are formed;

(i) separating and removing the water-gas, and recycling the entire fourth residue of coke from step (h) to the first stage pyrolysis in step (c) to serve as a solid heat source for said pyrolysis.

4,309,198

METHOD OF CONVERTING LIQUID AND/OR SOLID FUEL TO A SUBSTANTIALLY INERTS-FREE GAS

Gerald Moss, Oxford, England, assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 31, 1979, Ser. No. 108,380

Claims priority, application United Kingdom, Jan. 9, 1979, 00761/79

Int. Cl.³ C10J *3/02*

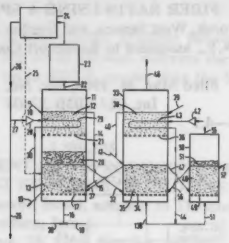
U.S. Cl. 48—197 R **9 Claims**

1. A method of converting liquid hydrocarbon fuel and/or solid carbonaceous fuel to a substantially inerts-free reducing and/or synthesis gas product, said method comprising:

(a) passing the fuel into a fuel conversion zone comprising a conversion bed of solid particles which are maintained at an elevated fuel conversion temperature and fluidized by a fluidizing gas which is paased into the bottom of the conversion bed, the conversion bed containing solid particles comprising calcium sulfate which constitutes substantially the sole source of oxygen used in the conversion of the fuel, the fluidizing gas comprising at least one gas phase and/or vapour phase substance which serves to

promote and/or mediate the transfer of oxygen to the fuel and/or to partially converted fuel derivatives from the calcium sulfate, which is thereby reduced to calcium sulfide whereby a substantially inerts-free reducing and/or synthesis product gas leaves the top level of the conversion bed, the fluidizing gas being substantially free of molecular oxygen and unreactive and/or inert materials which would dilute the gas product;

(b) transferring solid particles containing calcium sulfide from the fuel conversion zone to an oxidizer bed in an oxidation zone and passing into the bottom of the oxidizer bed a gas containing molecular oxygen at a rate sufficient



to fluidize the solid particles in the oxidation bed and to oxidize the calcium sulfide in said solid particles to form said calcium sulfate with the generation of heat which maintains the temperature of particles in the oxidizer bed higher than the temperature of particles in the conversion bed; and

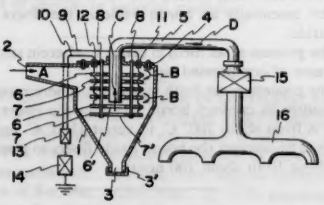
(c) transferring the solid particles comprising said calcium sulfate from the oxidizer bed to the conversion bed for use in converting further quantities of fuel in the conversion bed, the solid particles thus transferred to the conversion bed furnishing at least some heat for maintaining the conversion bed at the said elevation fuel conversion temperature.

4,309,199

AIR CLEANER FOR ENGINES

Nagatoshi Suzuki, 5-7-7, Kugahara, Ohta-ku, Tokyo, Japan (146)

Filed May 15, 1980, Ser. No. 150,143
Int. Cl.³ B03C 3/14
U.S. Cl. 55—127 **7 Claims**



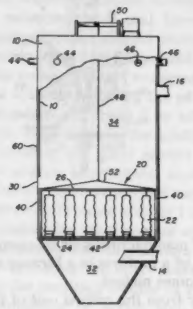
1. An air cleaning device for internal combustion engines comprising a cyclone duct having a wide air intake, an air outlet and a narrow dust-collecting portion opposite to said air intake, an electrostatic filter mounted within said duct coaxially to the axis of said duct, between said air intake and the air outlet, and having plural dust collecting plates and plural discharge plates, wherein said dust collecting plates and discharge plates are alternately disposed with a predetermined interval therebetween and are arranged perpendicular to said axis of said duct, and means for applying an electrostatic charge to said dust collecting plates and discharge plates.

4,309,200

BAGHOUSE WITH COLLAPSIBLE BAG FILTER ASSEMBLY

Cathy A. Heffernan, Andover, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed Sep. 2, 1980, Ser. No. 183,506
Int. Cl.³ B01D 46/02
U.S. Cl. 55—341 NT **7 Claims**



1. A filter apparatus for cleaning a gas laden with solid particles comprising:

a. a housing defining a filter chamber therein;

b. a tube sheet having a plurality of openings therein disposed within said housing so as to divide the filter chamber into a dirty gas chamber and a clean gas chamber;

c. a grid sheet disposed within said housing in spaced relationship from and parallel to said tube sheet;

d. a plurality of elongated fabric filter bags extending between said tube sheet and said grid sheet, said filter bags in combination with said tube sheet and said grid sheet forming a bag filter assembly, each of said filter bags having an open end and a closed end, the open end of each bag mounted to an opening in said tube sheet and the closed end of each bag secured to said grid sheet, said plurality of fabric filter bags thereby providing a porous interface which the particles-laden gas must traverse in passing from the dirty gas chamber to the clean gas chamber;

e. guide means disposed within said housing for guiding the movement of at least one of said sheets toward the other thereby permitting the bag filter assembly to be collapsed;

f. an access opening in said housing through which the collapsed bag filter assembly may be removed;

g. an access door for sealing said access opening when said access door is in the closed position; and

h. releasable support means operatively associated with said one of said sheets for supporting said one sheet in spaced relationship from the other sheet, said one sheet being freely movable toward the other sheet to collapse the bag filter assembly upon release of said support means, the other sheet being slidably mounted but otherwise held stationary within said housing so that the collapsed bag filter assembly can be slidably withdrawn from said housing through said access opening.

4,309,201
METHOD OF AND APPARATUS FOR MANUFACTURING OPTICAL FIBRES

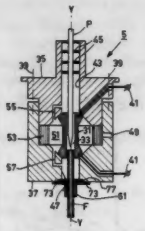
Marius A. F. Klop; Wilhelmus C. P. M. Meerman; Jan G. J. Peelen, and Hermanus N. Tuin, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 19, 1980, Ser. No. 132,470

Claims priority, application Netherlands, Mar. 21, 1979, 7902201

Int. Cl.³ C03B *37/00*

U.S. Cl. 65—2 **7 Claims**



1. A method of manufacturing fibers comprising the steps of:
heating an end of a preform in a furnace until the end of the preform becomes melted;
drawing a fiber from the melted end of the preform;
flushing the melted end of the preform and the fiber with an inert gas; and
withdrawing the fiber from the furnace;
CHARACTERIZED IN THAT there is also performed the step of condensing contaminants and gaseous reaction products from the inert gas along a condensation element which surrounds the fiber, substantially all condensed contaminants and gaseous reaction products condensing and settling on the condensation element.

4,309,202
METHOD AND APPARATUS FOR FORMING AND PACKAGING MULTISTRAND ROVING

Kantilal R. Parbhoo, Reynoldsburg, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 7, 1980, Ser. No. 137,683

Int. Cl.³ C03B *37/025*

U.S. Cl. 65—3.1 **14 Claims**

1. The method of forming and packaging a roving comprising a plurality of continuous filaments including advancing the filaments by winding a roving of strands of the filaments into a package, applying coating material to the filaments by an applicator, engaging a plurality of spaced streams of gas with the coated filaments immediately below the applicator, separating the coated filaments into a plurality of strands by the streams of gas, converging the strands into a roving, and traversing the roving to distribute the roving lengthwise of the package.

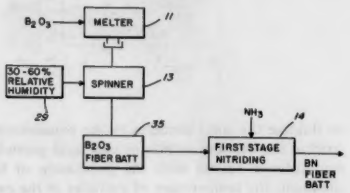
4,309,203
PROCESS FOR MANUFACTURING BORON NITRIDE FIBER BATTS USING A SPINNER

John L. Tworek, West Seneca, and Gordon R. Rignel, Lockport, both of N.Y., assignors to Kennecott Corporation, Stamford, Conn.

Filed Mar. 28, 1980, Ser. No. 134,905

Int. Cl.³ C03B *37/04*

U.S. Cl. 65—4.1 **8 Claims**



1. A process for producing non-woven, internally cohesive, boron nitride fiber batts, comprising the steps of:
melting solid boron oxide;
extruding the molten boron oxide from a rapidly spinning drum having a plurality of circumferentially arranged perforations, whereby said molten boron oxide is extruded through said perforations into a plurality of strands;
directing an annular gas stream at a temperature in excess of 700° C. obliquely against each of said strands to attenuate said strands into fibers said temperature being of an intensity and duration to cause the fibers to become sticky and bond together;
subjecting said fibers to a turbulent air flow sufficient to cause random orientations and intertwining of the fibers;
collecting said fibers into a bundle; and
heating said bundle in an anhydrous ammonia atmosphere to a sufficient temperature and for a sufficient time to convert essentially all boron oxide in the fibers into boron nitride.

2. The process as set forth in claim 1, wherein said gas stream is a stream of compressed air.

8. The process as set forth in claim 2, wherein said sufficient temperature to convert boron oxide in the fibers into boron nitride is from about 700° C. to about 1100° C. and said sufficient time to convert the boron oxide fibers to boron nitride is from about 10 to about 100 hours.

4,309,204
PROCESS AND APPARATUS FOR REMELTING SCRAP GLASS

Robert Brooks, Columbus, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

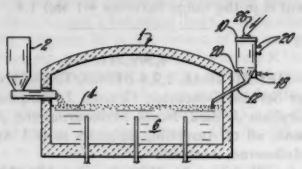
Filed Nov. 19, 1979, Ser. No. 95,197

Int. Cl.³ C03B *5/225, 3/00*

U.S. Cl. 65—28 **7 Claims**

1. A process for recycling scrap glass including the steps of:
feeding scrap glass to a scrap glass melting furnace;
maintaining oxidizing conditions within the scrap furnace so as to burn-off organic binders or sizes;
converting the scrap glass to a molten glass; and

feeding the molten glass to a glass melting furnace which is also being fed granular raw glass batch, including the step



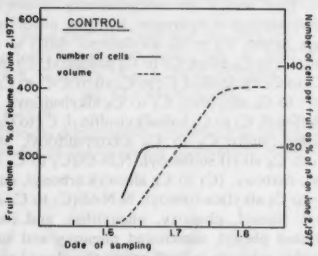
of maintaining a temperature gradient between the top and bottom of the scrap furnace wherein the top of the scrap melter is up to 600° F. cooler than the bottom.

4,309,205

ENHANCEMENT OF REPRODUCTIVE PLANT DEVELOPMENT BY MEANS OF CHOLINE SALTS

Bezalel Kessler, Rehovot, Israel, assignor to The State of Israel Ministry of Agriculture, Israel

Filed Aug. 25, 1980, Ser. No. 180,907
Claims priority, application Israel, Aug. 27, 1979, 58112
Int. Cl.³ C05G *3/00*
U.S. Cl. 71—27 **8 Claims**



1. A method of increasing the quantity and quality of flowers and fruits of plants growing in soil, which comprises applying to mature plants during its reproductive stage a flower or fruit quantity and quality improving effective amount of at least one non-toxic salt of choline in aqueous medium.

4,309,206

PROCESS FOR THE PRODUCTION OF ODORLESS PRILLED UREA-DICYANDIAMIDE FERTILIZERS

Horst Michaud; Heinrich Röck, and Josef Seeholzer, all of Trostberg, Fed. Rep. of Germany, assignors to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany

Continuation of Ser. No. 19,554, Mar. 12, 1979, abandoned, which is a continuation of Ser. No. 876,481, Feb. 2, 1978, abandoned. This application Sep. 26, 1980, Ser. No. 191,281
Claims priority, application Fed. Rep. of Germany, Apr. 1, 1977, 2714601
Int. Cl.³ C05C *9/00*
U.S. Cl. 71—28 **10 Claims**

1. A method for producing an odorless solid urea-dicyandiamide fertilizer which comprises heating a mixture of urea and dicyandiamide which mixture contains 5–30% by weight of dicyandiamide nitrogen, based on the total weight of nitrogen in the mixture, to form a molten mixture and then prilling the molten mixture, said heating being so carried out that the temperature of said mixture does not exceed 125° C.

4,309,207

PLANT GROWTH INHIBITING AND ANTIFUNGAL EXTRACT PREPARED FROM THE VEGETATIVE PARTS OF PLANTS OF THE GENERA VACCINIUM AND MYRICA

Robert M. Devlin, 157 Bristol Ave., Hyannis, Mass. 02601

Filed Jan. 7, 1980, Ser. No. 110,267
Int. Cl.³ A01N *65/00*
U.S. Cl. 71—79 **10 Claims**

1. A plant growth inhibiting and fungicidally effective extract prepared from the leaves and/or vines of plants of cranberry, blueberry and bayberry by the method comprising: admixing said leaves and/or vines of said plants with an aqueous-acetone mixture, whereby acetone soluble and water soluble chemicals are extracted from said leaves and/or vines, separating the aqueous-acetone extract from the leaf and or vine solids, evaporating the acetone from said aqueous-acetone extract to reduce the volume thereof to approximately 15 to 25 percent of its initial volume, adjusting the pH of the resulting extract to a pH value between 1 and 2 by addition thereto of concentrated sulfuric acid, treating the acidified extract with ethyl acetate and washing the ethyl acetate extract with an aqueous solution of sodium bicarbonate, separating the aqueous mixture from the organic mixture and adjusting the pH of said aqueous mixture to a pH value of from 1 to 2 with concentrated sulfuric acid, admixing ethyl acetate with said acidified aqueous mixture, separating the ethyl acetate extract from the aqueous mixture, evaporating the ethyl acetate from said extract and dissolving the resulting residue in a solvent selected from the group consisting of water and C_1–C_4 alcohols, whereby the plant growth regulating and fungicidal extract is obtained and the active ingredient is present in an effective amount for inhibiting seed germination, seedling growth and fungus.

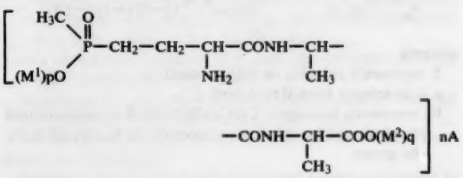
4,309,208

HERBICIDAL COMPOSITIONS AND HERBICIDAL PROCESSES

Tetsuo Takematsu; Makoto Konnai, both of Utsunomiya; Kunitaka Tachibana, Yokohama; Takashi Tsuruoka, Kawasaki; Shigeharu Inouye, and Tetsuro Watanabe, both of Yokohama, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Filed Nov. 13, 1978, Ser. No. 959,838
Claims priority, application Japan, Nov. 8, 1977, 52/133013; Mar. 9, 1978, 53/25971
Int. Cl.³ A01N *57/00*
U.S. Cl. 71—86 **4 Claims**

1. A process for severely damaging or killing unwanted herbaceous and woody plants, which comprises applying to plants susceptible thereto a herbicidally effective amount at a rate of 25–3,000 g. per 10 ares of a compound of the formula:



wherein M^1 and M^2 are each hydrogen or a cation selected from the group consisting of sodium, potassium, lithium, copper, magnesium, calcium, zinc, nickel, maganese and ammonium which is unsubstituted or substituted by 1–4 lower alkyl, hydroxy lower alkyl, or lower alkenyl; A is an inorganic or organic acid selected from the group consisting of hydrochloric, sulfuric, hydrobromic, phosphoric, perchloric, nitric, acetic, propionic, citric, tartaric, monochloroacetic, trichloro-

acetic and trifluoroacetic acids; n is 0, 0.5 or 1, p is the inverse number of the valency of M^1; and q is the inverse number of the valency of M^2.

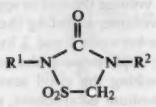
4,309,209

HERBICIDAL METHOD AND COMPOSITION

John W. Kobzina, Walnut Creek, Calif., assignor to Chevron Research, San Francisco, Calif.

Filed Aug. 15, 1977, Ser. No. 824,598
Int. Cl.³ A01N *43/82*
U.S. Cl. 71—91 **12 Claims**

1. A method of inhibiting the growth of undesirable vegetation comprising applying to the locus where such growth is not desired a herbicidally effective amount of a compound of the formula:



wherein R^1 is methyl or ethyl and R^2 is phenyl; or phenyl substituted with 1 to 2 halogen atoms, 1 to 2 alkyl groups of 1 to 2 carbon atoms, or 1 to 2 alkoxy groups of 1 to 2 carbon atoms.

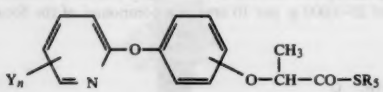
4,309,210

PREEMERGENCE METHOD OF SELECTIVELY CONTROLLING WEEDS IN CROPS OF CEREALS AND COMPOSITION THEREFOR

Marco Quadranti, Brugg, and Hans-Rudolf Gerber, Prattein, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 21, 1979, Ser. No. 97,027
Claims priority, application Switzerland, Dec. 1, 1978, 12305/78
Int. Cl.³ A01N *43/68, 43/40*
U.S. Cl. 71—93 **5 Claims**

1. A composition for the selective control of weeds in crops of wheat and barley which, in addition to containing conventional carriers and/or adjuvants, contains, as active herbicidal component a herbicidally effective amount of a 4,6-di-(C_1–C_4 alkylamino)-s-triazine which is substituted in the 2-position by chlorine, bromine, methoxy, methylthio or ethylthio, and, as safening component a safening amount of a pyridyl ether derivative of the formula

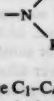


wherein

Y represents chlorine or trifluoromethyl;

n is an integer from 0 to 2; and

R_5 represents hydrogen, C_1–C_4 alkyl which is unsubstituted or substituted by chlorine or bromine, by C_1–C_4 alkyl, by the group



in which R_a and R_b are C_1–C_4 alkyl, or by cyano; C_3 or C_4 alkenyl, which is unsubstituted or mono-substituted by chlorine or bromine; C_3 or C_4 alkynyl which is unsubstituted or mono-substituted by chlorine or bromine; or phenyl;

in which the ratio of the herbicidal component to the safening component is in the range between 4:1 and 1:4.

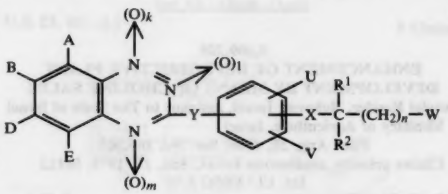
4,309,211

HERBICIDAL 1,2,4-BENZOTRIAZINES

Alexander Serban, Doncaster; Graeme J. Farquharson, Reservoir; Graham J. Bird, North Melbourne, and Jack Lydiate, Viewbank, all of Australia, assignors to ICI Australia Limited, Melbourne, Australia

Filed Aug. 13, 1980, Ser. No. 178,012
Claims priority, application Australia, Aug. 31, 1979, PE0298
Int. Cl.³ C07D *253/08*; A01N *43/64*
U.S. Cl. 71—93 **13 Claims**

1. A compound of formula I



I

or a salt thereof wherein:

A, B, D, E, U and V are independently chosen from the group consisting of hydrogen, halogen, nitro, cyano, thiocyano, amino, C_1 to C_6 alkylamino, di(C_1 to C_6 alkyl)amino, C_1 to C_6 alkyl, C_1 to C_6 haloalkyl, C_2 to C_6 alkenyl, C_3 to C_7 cycloalkyl, C_1 to C_6 alkoxy, C_1 to C_6 haloalkoxy, C_1 to C_6 alkylthio, C_1 to C_6 alkylsulfinyl, C_1 to C_6 alkylsulfonyl, C_1 to C_6 haloalkylsulfinyl, C_1 to C_6 haloalkylsulfonyl, sulfo, C_1 to C_6 alkoxysulfonyl, sulfamoyl, N-(C_1 to C_6 alkyl) sulfamoyl, N,N-Di(C_1 to C_6 alkyl)sulfamoyl, carboxy, (C_1 to C_6 alkoxy)carbonyl, carbamoyl, N-(C_1 to C_6 alkyl)carbamoyl, N,N-(di(C_1 to C_6 alkyl)carbamoyl, phenyl, phenoxy, phenylthio, and the groups substituted phenyl, substituted phenoxy and substituted phenylthio wherein in each group the phenyl ring is substituted with one to three substituents chosen from the group consisting of halogen, C_1 to C_6 alkyl, C_1 to C_6 haloalkyl, C_1 to C_6 alkoxy, nitro and cyano;

R^1 is chosen from the group consisting of hydrogen, C_1 to C_6 alkyl, C_2 to C_6 alkenyl, C_2 to C_6 alkoxyalkyl, C_1 to C_6 haloalkyl, acetyl, propionyl, and C_2 to C_6 alkoxycarbonyl;

R^2 is chosen from the group consisting of hydrogen, C_1 to C_6 alkyl, C_2 to C_6 alkenyl, C_2 to C_6 alkoxyalkyl and C_1 to C_6 haloalkyl, or R^1 and R^2 together may form a methylene, ethylidene, propylidene or isopropylidene group;

W is chosen from the group consisting of cyano, thiocarbamoyl,

and CH_2Z wherein:

G is chosen from the group consisting of hydroxy, mercapto, C_1 to C_{10} alkoxy, C_1 to C_{10} haloalkoxy, C_2 to C_{10} alkenyloxy, C_2 to C_{10} alkynyloxy, C_1 to C_{10} alkylthio, C_2 to C_{10} alkenylthio, C_2 to C_{10} alkynylthio, C_3 to C_7 cycloalkoxy, C_3 to C_7 cycloalkoxy substituted with one or two C_1 to C_4 alkyl groups, phenoxy, phenylthio, benzyloxy, benzylthio, the group C_1 to C_{10} alkoxy substituted with a substituent chosen from the group consisting of C_1 to C_6 alkoxy, amino, ammonio, cyano, N-(C_1 to C_6 alkyl)amino, N,N-di(C_1 to C_6 alkyl)amino, and N,N,N-tri(C_1 to C_6 alkyl)ammonio, the groups phenoxy, phenylthio, ben-

zyloxy and benzylthio wherein in each group the phenyl ring is substituted with from one to three substituents chosen from the group consisting of halogen, nitro, cyano, C_1 to C_6 alkyl, C_1 to C_6 haloalkyl and C_1 to C_6 alkoxy, the group OM wherein M is the cation of an inorganic or organic base, the group $—NHSO_2R^3$ wherein R^3 is chosen from C_1 to C_{10} alkyl and C_1 to C_{10} haloalkyl, the group $—NR^4R^5$ wherein R^4 and R^5 are independently chosen from the group consisting of hydrogen, C_1 to C_6 alkyl, phenyl and benzyl and the group $—O—N=R^6$ wherein R^6 is a C_1 to C_{10} alkylidene group;

and Z is chosen from halogen, hydroxy, mercapto, C_1 to C_{10} alkoxy, C_1 to C_{10} haloalkoxy, C_1 to C_{10} alkylthio and the group NR^4R^5 wherein R^4 and R^5 are as hereinbefore defined;

X and Y are independently chosen from oxygen and sulfur;

k, l and m are independently chosen from 0 and 1 provided that k+l+m is 0, 1 or 2; and

n is 0, 1 or 2.

11. A process for severely damaging or killing unwanted plants which process comprises applying to said plants, or to the growth medium of said plants, an effective amount of a compound as defined according to claim **1**.

4,309,212

HERBICIDAL COMPOSITIONS AND METHODS EMPLOYING UREA DERIVATIVES

Ichiki Takemoto, Takarazuka; Seizo Sumida, Nishinomiya; Ryo Yoshida, Kawanishi, and Katsuzo Kamoshita, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

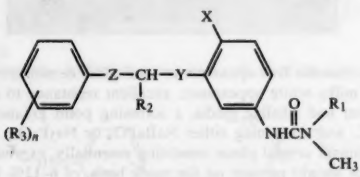
Filed Oct. 19, 1978, Ser. No. 952,775

Claims priority, application Japan, Oct. 26, 1977, 52-129089; Feb. 28, 1978, 53-23027; Mar. 1, 1978, 53-23891

Int. Cl.³ A01N *47/30*

U.S. Cl. 71—120 **11 Claims**

1. A herbicidal composition comprising as an active ingredient at least one of the following compounds of the formula:



wherein R_1 is hydrogen, methyl or methoxy, R_2 is hydrogen or lower alkyl, R_3, which may be the same or different, is halogen, lower alkyl, lower alkoxy, lower alkylthio or trifluoromethyl, n is an integer of 0 to 5, X is hydrogen or halogen, Y is oxygen or sulfur and Z is a straight or branched C_1–C_8 alkylene group which may optionally have at least one atom of oxygen and/or sulfur at the end of and/or inside the carbon chain, and an inert carrier.

4,309,213

PROCESS OF ENCAPSULATION BY INTERFACIAL POLYCONDENSATION

Gerard Graber, Lyons; Bernard Chatenet, Ecully, and Philippe Pellenard, Decines, all of France, assignors to Rhone Poulenc Agrochimie, Lyons, France

Filed Dec. 26, 1978, Ser. No. 973,164

Claims priority, application France, Dec. 30, 1977, 77 39950

Int. Cl.³ A01N *47/30, 25/10;* **B01J** *13/00*

U.S. Cl. 71—120 **30 Claims**

1. In a process for the encapsulation of a liquid hydrophobic substance by interfacial polycondensation comprising in a first stage, dispersing, in an aqueous phase, an organic phase consisting essentially of the liquid hydrophobic substance to be encapsulated and at least one hydrophobic reagent having two or three functional groups selected from the groups consisting of carboxylic acid chloride, sulfonyl acid chloride, isocyanate and mixtures thereof; and then, in a second stage, causing the polycondensation of the hydrophobic reagent with at least one di- or tri-functional amine as a hydrophilic reagent, said liquid hydrophobic substance being inert to said hydrophobic reagent and the polycondensation product thereof:

the improvement wherein, prior to said hydrophobic reagent being brought into contact with said di- or tri-functional amine, said di- or tri-functional amine in the aqueous phase has its amine functions rendered unreactive by salification with hydrohalic acid and, in the second stage, the polycondensation is started by liberating the amine functions through the addition, to the aqueous phase, of an equivalent amount of an inorganic base which is stronger than the amine.

4,309,214

MANUFACTURE OF METAL POWDER

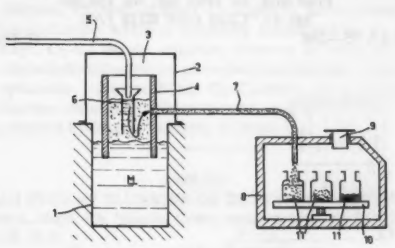
Jean Foulard, Ablonsur Seine; Gerard Bentz, Elancourt-Trappes, and Jean Galey, Voisins Bretonneux, all of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Aug. 27, 1979, Ser. No. 70,036

Claims priority, application France, Sep. 18, 1978, 78 26648

Int. Cl.³ B22D *23/08*

U.S. Cl. 75—0.5 B **14 Claims**



1. A method of producing a metal powder which comprises, in combination:

heating a metallic material in a closed treating enclosure until the vapor pressure of the material is at least about 1 mm Hg;

pouring sufficient cryogenic fluid in the liquid phase to maintain a thick layer of fluid over the thus heated metallic material and thereby condense vapor from the material and form a multiplicity of solid particles;

evacuating the cryogenic fluid from the enclosure with the solid particles in suspension;

separating the solid particles from the cryogenic fluid; and

collecting the solid particles in powder form.

14. A method of producing a metal powder which comprises, in combination:

heating a copper-zinc alloy in a closed treating enclosure to a temperature of about 1065° C. until the vapor pressure of the alloy is at least about 1 mm HG;

pouring liquid nitrogen over the thus heated alloy to condense vapor from the alloy and form a multiplicity of solid particles;

evacuating the nitrogen from the enclosure with the solid particles in suspension;

separating the solid particles from the nitrogen; and

collecting the solid particles in powder form.

4,309,215
METHOD FOR THE CEMENTATION OF METALS

Reinhard Nissen, and Rupprecht Graf, both of Cologne, Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 18,018, Mar. 6, 1979, abandoned. This application Oct. 29, 1979, Ser. No. 89,625
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1978, 2809535
Int. Cl.³ C22B *15/12*
U.S. Cl. 75—109 13 Claims

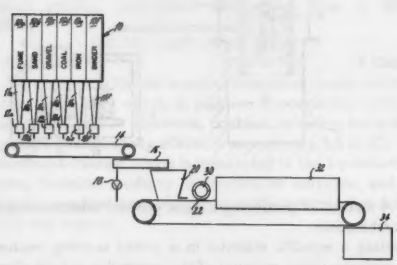
1. In a method for the cementation of a metal from a solution containing metallic ions by the addition of a cementation medium, the improvement which comprises:

carrying out the cementation reaction in a reaction chamber located in an oscillating reactor which is at least partially filled with agitation bodies inert with respect to the reaction, said agitation bodies having a maximum dimension in the range from 2 to 150 mm and being sufficiently large to transmit the oscillations of the reactor into said reaction chamber, the specific gravity of said bodies being appreciably greater than the specific gravity of the solids in said reactor, said reaction being carried out for a time on the order of 55 seconds.

4,309,216
LOW DENSITY COMPACTS OF PREPARED MIX FOR USE IN THE PRODUCTION OF SILICON AND FERROSILICON

Rodney F. Merkert, Buffalo, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Mar. 26, 1980, Ser. No. 134,205
Int. Cl.³ C22B *1/08;* B22F *1/00*
U.S. Cl. 75—256 10 Claims



1. A method of making low density, porous compacts for use in the production of silicon and ferrosilicon comprising blending together silica fume, a finely-divided carbonaceous reducing agent, optionally iron particles, a binder and water to form a wet mix, said silica fume having a particle size of less than about 0.5 microns, depositing the wet mix evenly in a relatively thin layer over a flat surface, drying the mix at elevated temperatures in order to remove water and then breaking the dried mix into irregular shaped pieces.

4,309,217
POLYCHROMATIC GLASSES AND METHOD

George H. Beall, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Aug. 25, 1980, Ser. No. 180,964
Int. Cl.³ C03C *3/04, 3/26*
U.S. Cl. 501—56 10 Claims

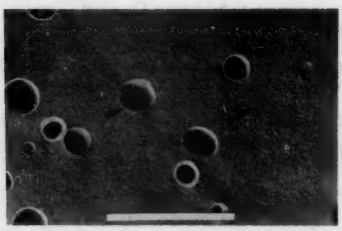
1. A silver-containing polychromatic glass article wherein the glass composition has a total silver content of at least 0.005% by weight, and at least a portion of the article is characterized by the presence of spherulites of lithium bromide (LiBr) crystallized on silver nuclei and by color-producing,

anisotropic silver films at or on the surface of the LiBr spherulites.

4,309,218
CHEMICALLY DURABLE PHOSPHATE OPAL GLASSES

James E. Flannery, Corning; John L. Stempin, Beaver Dams, and Dale R. Wexell, Corning, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Nov. 3, 1980, Ser. No. 203,317
Int. Cl.³ C03C *3/04, 3/08*
U.S. Cl. 501—32 2 Claims



1. A fluorine-free spontaneous opal glass demonstrating a dense, milky-white appearance, excellent resistance to attack by water and alkaline media, a softening point greater than 760° C., and containing either $NaBaPO_4$ or $Na_5P_3O_{10}$ as the predominant crystal phase consisting essentially, expressed in terms of weight percent on the oxide basis, of 6–12% Na_2O, 5–16% BaO, 0.9–7% Al_2O_3, 2–7% B_2O_3, 55–70% SiO_2, and 5–9% P_2O_5.

4,309,219
PHASE SEPARATED, NON-CRYSTALLINE OPAL GLASSES

James E. Flannery, Corning; John L. Stempin, Beaver Dams, and Dale R. Wexell, Corning, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jan. 26, 1981, Ser. No. 228,197
Int. Cl.³ C03C *3/04, 3/08*
U.S. Cl. 501—32 3 Claims

1. A spontaneous, essentially non-crystalline opal glass exhibiting a very dense, milky-white appearance, a softening point in excess of 700° C., a coefficient of thermal expansion (25°–300° C.) between about $65–85\times10^{-7}$/°C., an opal liquidus no higher than 1200° C., and excellent resistance to weathering and attack by alkaline detergents consisting essentially, expressed in terms of weight percent on the oxide basis as calculated from the batch, of 2–5% K_2O, 4–10% Na_2O, 4.5–12% RO, wherein RO consists of 0–3% MgO, 0–6% CaO, 0–8% SrO, and 0–11% BaO, 4–9% B_2O_3, 6–15% Al_2O_3, 0–5% TiO_2, 51–66% SiO_2, 1–6% P_2O_5, and 1–5% F.

4,309,220

INORGANIC ADHESIVE FOR ASSEMBLING METALLIC COMPONENTS

Andre R. Hivert, Pontoise, and Philippe M. Galmiche, Clamart, both of France, assignors to Office National d'Etudes et de Recherche Aerospatiales, Chatillon, France

Filed Jan. 16, 1980, Ser. No. 112,480

Claims priority, application France, Jan. 23, 1979, 79 01615

Int. Cl.³ C04B *37/02;* **C09D** *1/02*

U.S. Cl. 106—84 **7 Claims**

1. Inorganic adhesive composition for bonding porous to non-porous metal structural components by means of heat treatment converting the adhesive compound into a metallo-ceramic cement, said adhesive composition comprising:

a sodium disilicate binder;

a powder metallic filler made up of a mixture of stainless steel powder having a grain size lying between 20 and 150 μm, the grains of which are coated with a superficial layer of a diffusion alloy containing aluminium, and of the total weight of the filler being 15–40% ultrafine chromium powder having a grain size lying between 0.5 and 3 μm.

4,309,221

ANTHRAQUINONE DERIVATIVES

Rütger Neeff; Meinhard Rolf, and Walter Müller, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

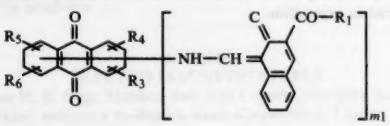
Filed May 17, 1979, Ser. No. 39,852

Claims priority, application Fed. Rep. of Germany, May 24, 1978, 2822632

Int. Cl.³ C08L *1/24;* **C07C** *123/00, 143/665*

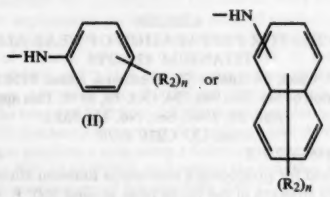
U.S. Cl. 106—164 **10 Claims**

1. An anthraquinone pigment of the formula



wherein

R_1 denotes a hydroxyl group or a radical of the formula



(II)

(III)

wherein

R_2 represents halogen, C_1–C_4-alkyl, C_1–C_4 alkoxy, nitro, trifluoromethyl, cyano, unsubstituted carbamoyl, carbamoyl substituted by a member selected from the group consisting of C_1–C_4-alkyl, phenyl which is optionally substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, fluorine, chlorine, bromine or nitro and benzyl, unsubstituted sulphamoyl, sulphamoyl substituted by a member selected from the group consisting of C_1–C_4-alkyl, phenyl which is optionally substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, fluorine, chlorine, bromine or nitro and benzyl, acylamino, arylamino, C_1–C_4-alkylsulphonylamino, phenylsulphonylamino which is optionally substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, fluorine, chlorine, bromine or nitro, unsubstituted benzylsulphonylamino or benzylsulphonylamino or benzylsulphonylamino substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, fluorine, chlorine, bromine or nitro, and

n represents 0, 1, 2, 3, or 4,

m_1 represents an integer between 1 and 4,

R_3 denotes hydrogen, halogen, nitro, C_1–C_4-alkyl, C_1–C_4 alkoxy, C_1–C_4-alkylamino, benzylamino, cyclohexylamino, C_1–C_4-alkylmercapto, phenylmercapto which is optionally substituted by C_1–C_4 alkyl, C_1–C_4 alkoxy, fluorine, chlorine, bromine, or nitro, C_1–C_4 alkyl carbonyl, C_1–C_4 alkoxycarbonyl, phenylamino which is optionally substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, chlorine or nitro, carbamoyl which is optionally monosubstituted or disubstituted by C_1–C_4-alkyl, benzyl or phenyl, it being possible for phenyl to be substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, fluorine, chlorine, bromine or nitro, carboxyl, hydroxyl, C_1–C_4-alkylcarbonylamino, benzoylamino which is optionally substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, chlorine, bromine, or nitro, C_1–C_4-alkylsulphonylamine or phenylsulphonylamino which is optionally substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, fluorine, chlorine, bromine or nitro,

R_4 denotes hydrogen, chlorine or hydroxyl,

R_5 denotes hydrogen, halogen, nitro, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylamino, C_1–C_4-alkylmercapto, phenylmercapto which is optionally substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, fluorine, chlorine, bromine, or nitro, C_1–C_4-alkoxycarbonyl, C_1–C_4-alkylcarbonyl, benzylamino, cyclohexylamino, phenylamino which is optionally substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, chlorine, bromine or nitro, carboxyl, hydroxyl, carbamoyl which is optionally monosubstituted or disubstituted by C_1–C_4-alkyl, benzyl or phenyl, it being possible for phenyl to be substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, fluorine, chlorine, bromine or nitro, C_1–C_4-alkyl, carbonylamino, benzoylamino which is optionally substituted by C_1–C_4-alkyl, C_1–C_4 alkoxy, chlorine, bromine, or nitro, C_1–C_4 alkylsulphonylamino or phenylsulphonylamino which is optionally substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, fluorine, chlorine, bromine or nitro and

R_6 denotes hydrogen, halogen, or hydroxyl.

4,309,222

KAOLIN CLAY SLURRIES OF REDUCED VISCOSITY

Hazen L. Hoyt, 4th, Niantic, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Oct. 9, 1980, Ser. No. 195,455

Int. Cl.³ C09C *1/42;* **C04B** *33/04*

U.S. Cl. 106—288 B **5 Claims**

1. A method of preparing an aqeous clay slurry of reduced low shear viscosity, which comprises dispersing from about 60 to 72 percent by weight of particulate refined kaolin clay in water at a pH of from about 6 to 8 in the presence of from about 0.01 to 0.05 percent of water-soluble citrate, expressed as anhydrous citric acid, and from about 0.02 to 0.08 percent of water-soluble polyacrylate, expressed as sodium polyacrylate, in a ratio of from about 0.4 to 6 grams of said polyacrylate per gram of said citrate, the combined amount of said citrate and said polyacrylate being from about 0.06 to 0.11 percent, each of said percentages being expressed by weight based on the weight of said clay.

4,309,223

FLUSHING PROCESS FOR PIGMENTS

Dale L. Rouwhorst, Holland, and Ronald L. Jillson, Midland, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

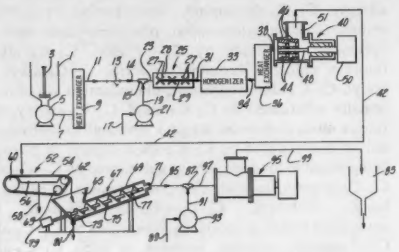
Filed Jan. 3, 1980, Ser. No. 109,357

Int. Cl.³ C09C *3/10;* **C09D** *17/00*

U.S. Cl. 106—309 **11 Claims**

1. A method of producing a pigment-hydrophobic organic vehicle product which comprises forcing an aqueous pigment-

containing pulp-hydrophobic organic vehicle mixture having a proportion of pigment to vehicle up to about 1:1 through a cylindrical chamber having defined at one end thereof an axial opening of a diameter smaller than that of said chamber, and at



least one second opening spaced from said axial opening, said mixture being forced through said chamber and said axial opening by a rotating helical surface whereby said product is forced through said axial opening, water is squeezed from said mixture and exits through said second opening.

4,309,224

METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE

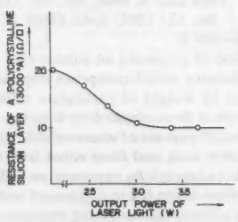
Tadashi Shibata, Menlo Park, Calif., assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 25, 1979, Ser. No. 78,783

Claims priority, application Japan, Oct. 6, 1978, 53-122626; Oct. 6, 1978, 53-122627

Int. Cl.³ H01L *21/268*

U.S. Cl. 148—1.5 **6 Claims**



1. A method for manufacturing a semiconductor device comprising the steps of:

forming an insulating film on at least part of the surface of a semiconductor substrate;

forming an electric conductive portion made of polycrystalline silicon layer doped with at least one impurity, at least on said insulating film;

heating said semiconductor substrate to permit at least said electric conductive portion made of said polycrystalline silicon layer to be heated; and

applying a radiation beam at least to said electric conductive portion after said heating step, thereby reducing the resistance value of said electric conductive portion.

4,309,225

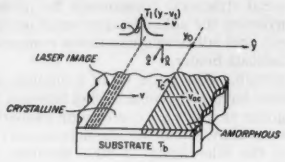
METHOD OF CRYSTALLIZING AMORPHOUS MATERIAL WITH A MOVING ENERGY BEAM

John C. C. Fan, and Herbert J. Zieger, both of Chestnut Hill, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 75,010, Sep. 13, 1979, abandoned. This application Feb. 22, 1980, Ser. No. 123,745

Int. Cl.³ H01L *21/263*; B23K *27/00*

U.S. Cl. 148—1.5 **34 Claims**



1. A method of converting solid amorphous material to a more crystalline state comprising the steps of:

(a) heating a portion of said material with energy from an energy beam to bring such portion to its crystallization temperature while maintaining the temperature below the melting temperature of the crystalline state of the material; and

(b) moving said energy beam in relation to said material at a velocity V, which is less than or equal to V_{ac} but fast enough to provide continuous controlled motion of the crystallization front; wherein V_{ac} is the normalized boundary velocity of the transformation of the amorphous material to crystalline.

4,309,226

PROCESS FOR PREPARATION OF NEAR-ALPHA TITANIUM ALLOYS

Charlie C. Chen, 34 Adams St., Westboro, Mass. 01581

Continuation of Ser. No. 949,754, Oct. 10, 1978. This application Apr. 28, 1980, Ser. No. 134,935

Int. Cl.³ C22F *1/18*

U.S. Cl. 148—12.7 B **4 Claims**

1. Method for producing a near-alpha titanium alloy having high creep strength in the range from around 900° F. to 1050° F., comprising:

(a) forging at a temperature in the alpha+beta or beta temperature ranges a composition consisting essentially by weight of 6% aluminum, 2% tin, 4% zirconium, 2% molybdenum, 0.1% silicon and the remainder titanium,

(b) cooling the forged composition to ambient temperature,

(c) subjecting the forged composition to solution heat treatment in the temperature range from beta transus +100° F. to beta transus +150° F. for 1 to 4 hours for a composition forged in the alpha and beta temperature range and to solution heat treatment in the temperature range from beta transus −100° F. to beta transus −50° F. for 2 to 8 hours for a composition forged in the beta temperature range,

(d) cooling said forged composition to ambient temperature,

(e) ageing said forged composition at a temperature of about 1100° F. for at least approximately 8 hours, and

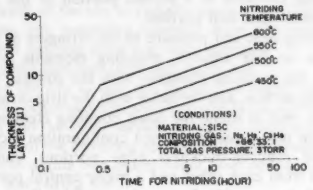
(f) cooling said forged composition to ambient temperature.

4,309,227

ION-NITRIDING PROCESS

Takashi Kajikawa, Miki; Minoru Makimura; Satoru Kunise, both of Akashi, and Satoshi Furuitsu, Kakogawa, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Jul. 12, 1979, Ser. No. 57,008
Claims priority, application Japan, Jul. 14, 1978, 53-86560
Int. Cl.[3] C21D *1/48*
U.S. Cl. 148—16.6 2 Claims



1. A process for ion-nitriding a metal workpiece by means of a glow discharge in a gas atmosphere containing nitrogen in a vacuum reactor, comprising the steps of ion-nitriding the workpiece at a high voltage level of glow discharge in a gas resulting from the introduction, into the reactor, of a gas mixture of nitrogen, hydrogen and ammonia in which the amount of the ammonia is at least 20% by volume, replacing the gas atmosphere with a gas mixture containing nitrogen and hydrogen but not containing ammonia and then further ion-nitriding the same workpiece at a lower voltage level of glow discharge in the gas atmosphere resulting from the introduction, into the reactor, of the gas mixture of nitrogen and hydrogen not containing ammonia.

4,309,228

ELECTRO MAGNETIC STEELS

James H. R. Page, Machen, and Alan Coombs, Newport, both of Wales, assignors to British Steel Corporation, London, England

Filed Mar. 24, 1980, Ser. No. 133,571
Int. Cl.[3] H01F *1/00*
U.S. Cl. 148—120 15 Claims

1. A method for producing a non-silicon steel for electro magnetic applications including the steps of producing a vacuum de-gassed steel melt containing less that 0.025% by weight of carbon, between 0.1% and 1.0% of manganese, between 0.01% and 0.15% phosphorus, not more than 0.02% of sulphur, not more than 0.007% of nitrogen, with titanium within the range of 0.05% to 0.25%, the remainder being iron, except for incidental impurities, hot rolling a slab derived from the melt to produce a strip using a finishing temperature within the range 900° C. to 950° C. and coiling the resulting hot rolled strip at a temperature of not less than 700° C., cold rolling the strip after coiling and cooling and annealing the cold rolled strip at a temperature within the range of about 900° C. to 1000° C.

4,309,229

METHOD OF GENERATING WATER VAPOR FREE GAS

Brian K. Hamilton, Saugus, Calif., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 645,847, Dec. 31, 1975, abandoned, which is a division of Ser. No. 387,406, Aug. 10, 1973, Pat. No. 3,950,009, which is a continuation of Ser. No. 224,524, Feb. 8, 1972, abandoned. This application Dec. 17, 1976, Ser. No. 751,502
The portion of the term of this patent subsequent to Apr. 13, 1993, has been disclaimed.
Int. Cl.[3] C06D *5/00*
U.S. Cl. 149—82 6 Claims

1. A method of supplying generated gas to expand an inflatable structure without the production of substantial water vapor during gas generation, comprising the steps of:

a. preparing a mixture consisting essentially of:
   1. an oxidizer which does not contain hydrogen, said oxidizer being selected from the group consisting of metal chlorates and perchlorates;
   2. a carbon material selected from the group consisting of carbon black and graphite;
   3. a carbonate coolant;
b. burning said mixture to produce a gas; and
c. directing the gas into the inflatable structure.

4,309,230

PROCESS FOR REPRODUCIBLY PREPARING TITANIUM SUBHYDRIDE

Richard S. Carlson, West Alexandria, Ohio, assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 30, 1980, Ser. No. 155,028
Int. Cl.[3] C06B *43/00*; C01G *23/00*
U.S. Cl. 149—109.6 10 Claims

1. A process for reproducibly preparing a titanium subhydride of the formula TiH_x having a substantially uniform titanium-hydrogen composition, from an original titanium-hydrogen composition of the formula TiH_y, wherein $x<y\leqq 2$, said process comprising the steps of:

(a) in a reactor, heating a quantity of finely powdered TiH_y at a selected temperature in the range of about 375° to 475° C. for a selected period of time of from about 1 to 24 hours, under dynamic vacuum conditions that constantly allow removal of hydrogen from said reactor, whereby hydrogen is removed substantially uniformly from each original powder grain of TiH_y to produce the TiH_x subhydride, and

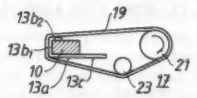
(b) recovering said TiH_x subhydride.

4,309,231

APPARATUS FOR APPLICATION OF A TAPE OF MATERIAL IN LONGITUDINAL DIRECTION OF A SUBSTANTIALLY RECTANGULAR ELECTRICAL CONDUCTOR

Gunnar Borgstrom, Vesteras, and Bengt Rothman, Skultuna, both of Sweden, assignors to ASEA Aktiebolag, Vesteras, Sweden

Filed Aug. 26, 1980, Ser. No. 181,655
Claims priority, application Sweden, Sep. 4, 1979, 7907341
Int. Cl.[3] H01B *13/26*
U.S. Cl. 156—54 4 Claims



1. Method of applying a tape of insulating material to an elongated, rectangular electrical conductor in a longitudinal direction thereof, the tape being provided with a binder for fixing it to the conductor, and a longitudinal portion of the tape being brought into contact with a first side of the conductor before the other portions of the tape are folded around the conductor and fixed thereto, the improvement comprising the steps of:

providing movable endless belts at successive operating stations for folding said other tape portions around the conductor;

moving said belts at said stations transversely of the longitudinal direction of the conductor for successively contacting the respective other portions of the tape with at least two other adjacent sides of the conductor; and

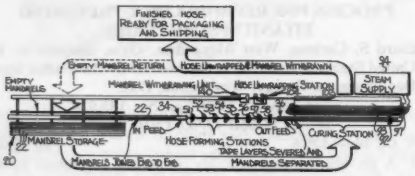
conveying the conductor and the tape through said operating stations.

4,309,232

METHOD AND APPARATUS FOR FABRICATING HIGH PRESSURE HOSE

Billy R. McIntosh, and Lawrence R. Jones, both of Salisbury, N.C., assignors to Carolina Rubber Hose Company, Salisbury, N.C.

Filed Jan. 25, 1980, Ser. No. 115,221
Int. Cl.³ B65C *1/00*
U.S. Cl. 156—64 **11 Claims**



1. A method for efficiently removing a fabric webbing or the like which is helically wound upon the exterior of an elongate hose or the like, and comprising the steps of

advancing the hose along a path of travel so as to define a longitudinal axis,

withdrawing the webbing from the exterior of the hose and winding the same upon a take-up spool which is rotating about its rotational axis, and including either (a) rotating the hose about said longitudinal axis or (b) revolving the rotating spool about said longitudinal axis, and while

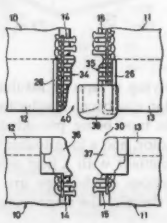
continuously sensing the longitudinal position of the webbing as it is withdrawn from the hose and adjusting the advancing speed of the hose with respect to either the rotating speed of the hose or the revolving speed of the spool, and so as to maintain the alignment of the webbing with the take-up spool as the webbing is withdrawn from the hose.

4,309,233

METHOD OF MANUFACTURING SEPARABLE SLIDE FASTENER

Shunji Akashi, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Continuation of Ser. No. 58,952, Jul. 19, 1979, abandoned. This application Mar. 12, 1981, Ser. No. 243,128
Claims priority, application Japan, Jul. 26, 1978, 53-91234
Int. Cl.³ B29D *5/00*; A44B *19/24*
U.S. Cl. 156—66 **4 Claims**



1. A method of manufacturing individual slide fasteners of a separable type from a pair of continuous slide fastener stringers having a pair of stringer tapes carrying on one surface thereof a pair of interengaged rows of coupling elements along their opposed longitudinal edges, comprising the steps of:

(a) feeding the continuous slide fastener stringers intermittently for a distance corresponding to a desired fastener length;

(b) placing a backing strip of synthetic resin only on the other surface of the stringer tapes on which no coupling elements are carried while the stringers are held stationary between each intermittent movement, said strip extending transversely of the stringers at a first portion thereof;

(c) placing a film of synthetic resin on said one surface of the stringer tapes on which the coupling elements are carried such that the film extends across and over a group of coupling elements at a second portion of the stringers adjacent to said first portion;

(d) applying heat and pressure to the stringers at said first portion to fuse adjacent coupling elements with each other, the coupling elements with the stringer tapes on said one surface, and the latter with the strip on said other surface, and to shape the fused coupling elements under pressure into a predetermined configuration including a pair of reduced-thickness edge portions transversely spaced from each other and a major central portion disposed between said edge portions and in alignment with the interengaged rows of coupling elements, ready for the formation of a separable pin and a retainer pin, and at said second portion to fuse adjacent coupling elements with each other, the coupling elements with the stringer tapes, and the film with the coupling elements and the stringer tapes, and to shape the fused coupling elements and the film into a predetermined configuration ready for the formation of a pair of top end stop lugs;

(e) cutting such fused and shaped coupling elements at said first portion so as to bisect said major central portion into the separable pin and the retainer pin, and at said second portion so as to finish the top end stop lugs;

(f) simultaneously with said cutting step (e), cutting the stringers along a line extending transversely across the stringers and passing near one end of the two pins, whereby said continuous slide fastener stringers are severed into an individual slide fastener length;

(g) threading a slider through one of the stringers of said individual fastener length on which the retainer pin has been formed; and

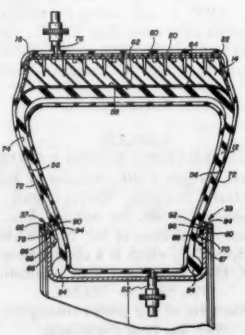
(h) attaching a retainer to the retainer pin.

4,309,234

TIRE RETREADING ENVELOPE SEAL

Phillip L. Witherspoon, Summerfield, N.C., assignor to Long Mile Rubber Company, Dallas, Tex.

Filed Jun. 23, 1980, Ser. No. 162,156
Int. Cl.³ B29H *5/16, 17/36*
U.S. Cl. 156—96 **8 Claims**



1. A method for preparing a tire for curing in a pressure chamber, the tire having sidewalls and including a tire casing

and tread material, each having a bonding surface, comprising the steps of:

mounting the tire on a curing rim having rim members extending generally radially outward adjacent the sidewalls of the tire to a peripheral edge;

securing an annular seal about the peripheral edge of said rim members, said annular seal having a notch therein for receiving said peripheral edge and defining first and second seal faces thereon, each inclined relative to the other;

covering the bonding surfaces of the tire with a flexible envelope extending generally radially inward adjacent the sidewalls of the tire to radially inner edges, said envelope having lips extending laterally from the outer surface thereof defining third seal faces thereon;

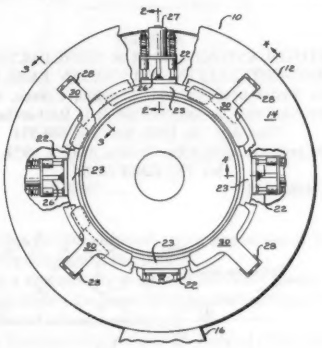
aligning the first and third seal faces; and

inflating the tire so that the lateral and radial expansion of the tire urges said first and third seal faces, said second seal faces and the outer surface of the envelope and the inner surface of the envelope and sidewalls into sealing engagement to define two independent seals between said envelope and curing rim.

4,309,235
RETRACTABLE BEAD SETTER ASSEMBLY AND METHOD OF OPERATION THEREOF

Edwin E. Mallory, Niles, Mich., and Hugh Bourassa, University Heights, Ohio, assignors to National-Standard Company, Niles, Mich.

Filed Jul. 9, 1980, Ser. No. 167,037
Int. Cl.³ B29H *17/24*
U.S. Cl. 156—131 **9 Claims**



8. The method of locating beads or beads and filler material in a tire building apparatus having bead clamp means to lock the tire carcass material to the bead or to the beads and filler material, comprising the steps of:

placing the beads or beads and filler material over bead fixture rings and substantially against a plurality of first segment elements movable at least radially, with said beads being substantially concentric to said first segment elements,

moving radially and axially a plurality of second segment elements to grip firmly the beads or the bead portion of the beads and filler material against said first segment elements with said first and said second segment elements positioned in circumferential relation to one another with at least portions thereof overlapping,

positioning said beads or said bead portion of said beads and filler material over said clamp lock means on said tire building apparatus,

expanding radially the bead clamp means to lock the tire carcass material to the beads,

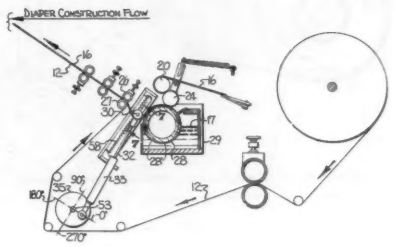
retracting both said first and said second segment elements at least radially, and

returning said first and said second elements to the original first position over said bead fixture ring.

4,309,236
PROCESS FOR ATTACHING ELASTIC STRIPS DURING THE MANUFACTURE OF ELASTIC LEG DISPOSABLE DIAPERS

Richard K. Teed, Greenwood, S.C., assignor to Riegel Textile Corporation, New York, N.Y.

Division of Ser. No. 115,280, Feb. 8, 1980, Pat. No. 4,261,782.
This application Sep. 15, 1980, Ser. No. 187,614
Int. Cl.³ A61F *13/16*; B32B *31/08*
U.S. Cl. 156—164 **3 Claims**



3. A process for manufacturing elastic leg disposable diapers having a central crotch area, outer waist areas and elastic extendible side portions in the crotch area, said process comprising the steps of:

superimposing a continuous fluid-permeable top cover sheet, a continuous fluid-impermeable bottom cover sheet and spaced-apart fluid-absorbent interior pads;

securing the top cover sheet and bottom cover sheet together along longitudinal edges and transversely between the interior pads to form serially-interconnected disposable diapers;

securing elastic strips continuously along the entire length of the longitudinal edges of each of the diapers including feeding continuous elastic strips at a predetermined constant rate from a supply into desired position in contact with the longitudinal edges of the diapers, while effecting adhesive securement therebetween along the entire length of the edges, and alternately stretching and relaxing predetermined lengths of the continuous elastic strips during said feeding step, while securing the stretched lengths of the continuous elastic strips to the crotch area and the relaxed lengths of the continuous elastic strips to the waist areas of the diapers, comprising nipping the elastic strips during the feeding thereof at spaced-apart points to define a predetermined distance of travel of the elastic strips between the nipping points, quickly increasing the distance of travel of the elastic strips for stretching lengths of the elastic strips and incrementally further increasing the distance of travel of the elastic strips for a predetermined period of time to maintain the stretching of the lengths of the elastic strips while they are being fed into position in the diaper, and then quickly decreasing the distance of travel of the elastic strips for relaxing lengths of the elastic strips and incrementally further decreasing the distance of travel of the elastic strips for a predetermined period of time to maintain the relaxing of the lengths of elastic strips while they are being fed into position in the diapers; and

cutting the interconnected diapers transversely between interior pads to form individual diapers;

whereby, the stretched lengths of the elastic strips will contract and form gathered and extendible side portions in the crotch areas of the individual diapers.

4,309,237

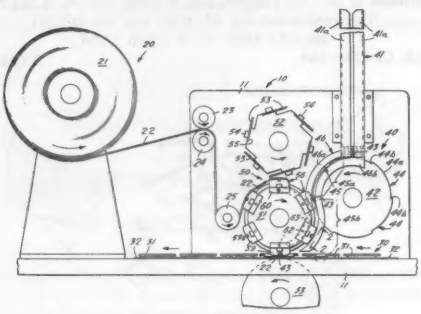
APPARATUS FOR ADHERING A CAN OPENING KEY TO A CONTAINER

Harold C. Lemke, Grayslake, and Stanley E. Rohowetz, Barrington, both of Ill., assignors to American Can Company, Greenwich, Conn.

Division of Ser. No. 929,489, Jul. 31, 1978, Pat. No. 4,233,331. This application Jan. 18, 1980, Ser. No. 113,205

Int. Cl.³ B32B *31/00*; B65C *9/08*

U.S. Cl. 156—521 **4 Claims**



1. An apparatus for severing strips of pressure sensitive adhesive film from a rotating supply thereof and for assembling and joining first and second components with said strips, comprising; a film supply payout means supported for feeding film at a continuous predetermined rate, a film cutter associated with said payout device said cutter rotating to receive fed film at a tangential interface to sever preset strips thereof, a strip supporting and positioning means designed to separately retain and continuously rotate said severed strips with adhesive exposed at a prescribed rate and frequency said supporting means having recesses configured to receive a first component in overlying relation to said severed strip, a supply means for said first component for individually feeding said first components to interengage with said strip supporting and positioning means in an ordered, oriented, timed and controlled manner at a tangential interface to permit conjugation of said first component and said severed strip for the carrying of the subassembly composed thereof by said supporting and positioning means with said components disposed over said strips within said recesses, and a second component supply means disposed for individually providing on a continuous basis said second components in a supported position tangential to and adjacent with said supporting and positioning means for assembly and bonding with said carried subassembly.

4,309,238

ADJUSTABLE TRACTION WHEEL TENSIONING MECHANISM FOR AN AUTOMATIC WALLBOARD JOINT TAPER

Thomas D. Hauk, Los Alamitos, Calif., assignor to Hawk Industries, Inc., Signal Hill, Calif.

Filed May 19, 1980, Ser. No. 150,892

Int. Cl.³ B32B *31/00*; B44C *7/02*

U.S. Cl. 156—575 **18 Claims**

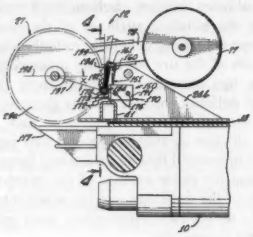
10. Apparatus for applying a selectively variable tensioning force to a toothed traction wheel rotatably mounted on the head assembly of an automatic wallboard joint taper, said apparatus comprising:

(a) an elongated arm;

(b) means for pivotally connecting an end portion of said arm to the head assembly;

(c) pawl means, connected to the free end of said arm, for engaging teeth on the traction wheel and restraining rotation of the wheel to a degree proportional to the magnitude of a yielding contact force between said pawl means and said teeth;

(d) means for exerting a selecitvely variable yielding pivotal force on said arm to urge said pawl means into engagement with said teeth with a yielding contact force of selectively variable magnitude, said pivotal force means including:



a spring and means interconnecting said spring between said arm and the head assembly in a first position in which said spring extends generally transversely from a first point along the length of said arm, and permitting movement of said spring to a second position in which said spring extends generally transversely from a second point along the length of said arm; and

(e) means for precluding undesired separation of said pawl means from said teeth.

4,309,239

METHOD AND MEANS FOR MANUFACTURING MONO-CRYSTALLINE SILICON IN TAPE FORM

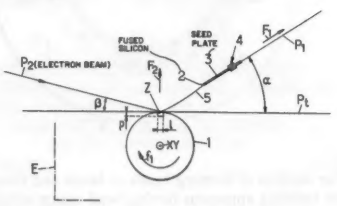
Huguette Rodot née Fumeton, Meudon, France, assignor to Agence Nationale de Valorisation de la Recherche, France

Filed Apr. 28, 1980, Ser. No. 144,574

Claims priority, application France, May 3, 1979, 79 11174

Int. Cl.³ C30B *15/06*

U.S. Cl. 156—601 **16 Claims**



1. In a process for manufacturing monocrystalline silicon in tape form in which recourse is had to a bar of polycrystalline silicon in the form of a cylinder of revolution, the improvement comprising:

forming at the surface of said cylinder and along a generatrix of the same, under vacuum or under neutral gas, a fused zone having a width of about 1 to about 5 mm and a depth of about 1 to about 3 mm,

contacting the edge of an oriented monocrystalline silicon plate arranged parallel to the axis of the cylinder and forming an angle α of about 30° to 45° with the plane tangential to the cylinder, at the level of the fused zone, with the fused zone to enable the constituent silicon of the plate to melt,

withdrawing the plate from the cylinder by moving it in its plane, the plate then drawing a film of fused silicon, the speed of withdrawal or "speed of drawing" being selected so that the thinning of the film before crystallization cor-

responds to the desired thickness of the monocrystal to be manufactured,

and,

imparting to the cylinder of polycrystalline silicon a movement of revolution of sufficient speed to maintain a constant supply of liquid in the fused zone along the generatrix.

4,309,240

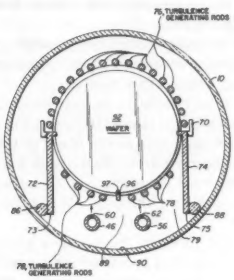
PROCESS FOR CHEMICAL VAPOR DEPOSITION OF FILMS ON SILICON WAFERS

Constantine J. Zaferes, Santa Clara, Calif., assignor to Advanced Crystal Sciences, Inc., San Jose, Calif.

Filed May 16, 1980, Ser. No. 150,555

Int. Cl.³ C30B *25/10*

U.S. Cl. 156—611 **8 Claims**



1. A process for the chemical vapor deposition of films on silicon wafers comprising the steps of:

providing a substantially evacuated enclosure for the wafers and maintaining the pressure within the enclosure substantially below atmospheric;

directing thermal radiation into the interior of the enclosure to heat the wafers;

supporting the wafers within the enclosure in a spaced-apart mutually parallel arrangement with the central axes normal to the wafers being generally collinear and with the planes defined by the wafers being oriented vertically;

introducing a reactant gas into the enclosure by first directing the gas horizontally from both ends of the length of the wafer arrangement simultaneously in a stream confined from the enclosure interior and then generating from said stream a single substantially vertically oriented curtain of gas flowing into the enclosure interior along the length of one side of the wafer arrangement;

prior to the passage of the flowing gas between the wafers, generating turbulence in the flow so as to facilitate the later deposition of film on the wafers;

after the gas has passed between the wafers and a portion of the gas has chemically reacted to deposit a film on the wafers, generating turbulence in the flow near the side of the wafer arrangement opposite the side where the gas was introduced to further facilitate the deposition of film on the wafers; and

removing the exhaust gas from the enclosure in a generally horizontal direction of flow.

4,309,241

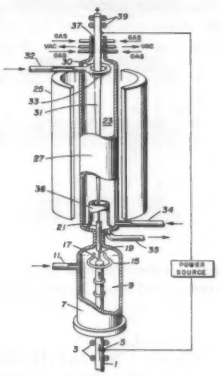
GAS CURTAIN CONTINUOUS CHEMICAL VAPOR DEPOSITION PRODUCTION OF SEMICONDUCTOR BODIES

Paul M. Garavaglia, Affton, and Henry W. Gutsche, St. Louis, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Jul. 28, 1980, Ser. No. 172,503

Int. Cl.³ C30B *25/08*

U.S. Cl. 156—613 **28 Claims**



1. A continuous process for preparing bodies of semiconductor materials comprising:

(a) pulling a virgin slim rod in situ in a pulling chamber from the reaction of a seed crystal and molten semiconductor material source;

(b) heating the slim rod to decomposition temperature of gaseous compounds containing suitable semiconductor materials for deposition upon the slim rod;

(c) passing the heated slim rod into a chemical vapor deposition chamber;

(d) maintaining the slim rod at a temperature sufficient for decomposing the gaseous compounds while contacting the slim rod with the decomposable gaseous compounds during the slim rod's transport through the chemical vapor deposition chamber;

(e) creating a gas curtain along the chemical vapor deposition chamber inner wall substantially preventing the gaseous compounds from reaching the wall;

(f) enlarging the slim rod as a result of thermal decomposition of the gaseous compounds; and

(g) pulling the resulting enlarged semiconductor body from the deposition chamber.

4,309,242

METHOD OF MANUFACTURING AN ELECTROSTATICALLY CONTROLLED PICTURE DISPLAY DEVICE

Ties S. Te Velde, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 715,429, Aug. 18, 1976, Pat. No. 4,178,077. This application May 9, 1979, Ser. No. 37,268

Claims priority, application Netherlands, Aug. 27, 1975, 7510103

Int. Cl.³ C23F *1/02*

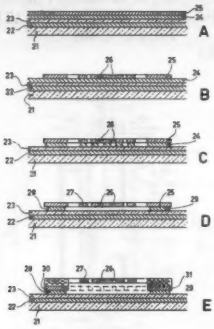
U.S. Cl. 156—644 **1 Claim**

1. A method of manufacturing an electrode which is secured to a supporting plate by means of flexible stripshaped parts so as to be movable, characterized by

(a) providing a first layer of a material which can be etched by means of a first etchant,

(b) providing a second layer of an electrode material which can be etched by means of a second etchant,

(c) providing by means of a photoetching method and the second etchant a plurality of apertures in the parts of the second layer which should not remain secured to the supporting plate,



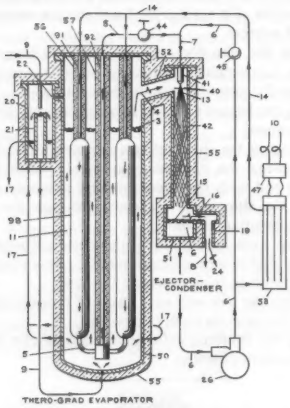
(d) removing parts of the first layer by underetching, via the apertures in the second layer, by means of the first etchant.

4,309,243

VERTICAL TUBE DISTILLERS

Charles T. Sundquist, 1971 Sheridan Pl., Richland, Wash. 99352

Filed Jun. 5, 1980, Ser. No. 156,734
Int. Cl.³ B01D *1/00*
U.S. Cl. 159—24 B **9 Claims**



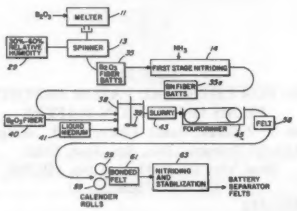
1. A distiller including the following: a vertical tube evaporator consisting of a closed evaporator vessel containing an upright heating tube, heating fluid flowing downward inside said heating tube, cooled heating fluid exiting from the bottom of said heating tube, solution in the shell space surrounding said heating tube, feed solution flowing into said shell space, a liquid-vapor interface above said heating tube, a vapor outlet in said evaporator vessel, vapor exiting from said vapor outlet; an ejector-condenser consisting of an intake manifold, a nozzle, a diffuser duct, and a condenser sump with a vapor outlet; said vapor from said evaporator vessel entering said intake manifold; propellant spray from said nozzle containing some of said cooled heating fluid; said propellant spray in combination with said diffuser duct condensing said vapor from said evaporator vessel; hot distillate collecting in said condenser sump; a distillate pump drawing suction from said hot distillate in said condenser sump; some of hot distillate, discharging from said distillate pump, passing through a distillate heater and exiting as said heating fluid; said heating fluid from said distillate heater entering the top of said heating tube.

4,309,244

PROCESS FOR MANUFACTURING BORON NITRIDE FIBER MATS

John L. Tworek, West Seneca, and Gordon R. Rignel, Clockport, both of N.Y., assignors to Kennecott Corporation, Stamford, Conn.

Filed Mar. 28, 1980, Ser. No. 134,765
Int. Cl.³ D21H *5/18, 5/26*
U.S. Cl. 162—102 **19 Claims**



1. A process for producing a non-woven, boron nitride fiber mat, comprising the steps of:

centrifugally spinning molten boron oxide into strands;

attenuating said strands with a gas stream into fibers;

collecting said fibers into a bundle;

heating said fiber bundle in an anhydrous ammonia atmosphere at a sufficient temperature and for a sufficient time to convert boron oxide in the fibers to boron nitride;

blending said boron nitride fibers with boron oxide fibers and a nonaqueous liquid medium to form a slurry;

processing said slurry through a Fourdrinier machine to form a felt;

passing said felt through the nip of a pair of cooperating calender rolls, at least one of which is heated to a temperature sufficient to soften said boron oxide fibers to bond the boron nitride fibers together; and

heating said bonded felt in an anhydrous ammonia atmosphere at a sufficient temperature and for a sufficient time to convert boron oxide in the felt to boron nitride.

4,309,245

PROCESS FOR MANUFACTURING BORON NITRIDE FIBER FELT USING A FOURDRINIER MACHINE

John L. Tworek, West Seneca, and Gordon R. Rignel, Clockport, both of N.Y., assignors to Kennecott Corporation, Stamford, Conn.

Filed Mar. 28, 1980, Ser. No. 134,903
Int. Cl.³ D21H *5/18*
U.S. Cl. 162—102 **4 Claims**

1. A process for producing boron nitride-bonded boron nitride fiber mats, comprising the steps of:

blending boron nitride fibers and boron oxide fibers in a ratio by weight of about 50–99% of boron nitride fibers and about 1–50% of boron oxide fibers, said fibers having a length of from about 0.1 inch to about 1.0 foot, with CCl_2F—$CClF_2$ to form a homogeneous slurry;

distributing said slurry in an essentially uniformly thick layer upon the moving screen of a Fourdrinier machine;

suctioning essentially all of said Freon from said slurry-supporting surface of said screen, yielding a boron nitride and boron oxide fiber felt;

heating said felt in an anhydrous gas selected from the group consisting of inert gases, nitrogen, ammonia, air, and mixtures thereof, to a sufficient temperature to fuse said boron oxide fibers to said boron nitride fibers; and

heating the fused felt in an anhydrous ammonia atmosphere to a sufficient temperature, and for a sufficient time to convert essentially all boron oxide in the fibers to boron nitride.

4,309,246

PAPERMAKING APPARATUS AND METHOD

David D. Hulit, Camas; Horace Hamby, III, and Ronald E. Hostetler, both of Vancouver, all of Wash., assignors to Crown Zellerbach Corporation, San Francisco, Calif.

Continuation of Ser. No. 808,229, Jun. 20, 1977, abandoned. This application Aug. 14, 1978, Ser. No. 933,203
Int. Cl.[3] D21H *5/24*
U.S. Cl. 162—113 9 Claims

1. A method for manufacturing a bulky, soft and absorbent paper web comprising the steps of:

forming an uncompacted wet web of principally lignocellulosic fibers from an aqueous slurry;

delivering the uncompacted wet web to an open mesh imprinting fabric formed of woven filaments, the web supporting surface of the fabric having spaced compaction elements comprising web imprinting knuckles located at the warp and weft crossover points of the filaments and said fabric having a surface void volume of from about 15 cc/m^2 to about 250 cc/m^2;

forming a first compression nip between the open mesh imprinting fabric and a papermaker's dewatering felt by passing said fabric and felt between a pair of opposed rolls;

selectively mechanically pre-drying the paper web by passing the web through said first compression nip formed between the imprinting fabric and the papermaker's dewatering felt so that significant compaction of the web occurs at the imprinting fabric compaction elements over about 5% to about 50% of the web surface, said web having a fiber consistency in the range of from about 8% to about 25% prior to passing through said first compression nip and in the range of from about 20% to about 38% after passing through said first compression nip;

removing the felt from the selectively mechanically predried web after said web passes through the first compression nip so that the web is retained solely on the imprinting fabric;

transferring the web directly to a drying surface from said open mesh imprinting fabric; and

finally drying the selectively mechanically pre-dried web.

4. The method according to claim 1 wherein the selectively mechanically pre-dried web is transferred from the imprinting fabric before final drying thereof by applying the web to a heated creping surface at a second compression nip formed between the creping surface and said imprinting fabric, said web being retained on the imprinting fabric in an essentially undisturbed condition as it is transported between the first and second compression nips so that the fabric compaction elements contact essentially the same portions of the web at the second compression nip that were contacted at the first compression nip, and including the additional steps of thermally drying the web on the creping surface after its application thereto and creping and removing the web from the creping surface after it is thermally dried.

4,309,247

FILTER AND METHOD OF MAKING SAME

Kenneth C. Hou, Glastonbury, and Eugene A. Ostreicher, Farmington, both of Conn., assignors to AMF Incorporated, White Plains, N.Y.

Continuation of Ser. No. 666,815, Mar. 15, 1976, abandoned. This application Feb. 21, 1980, Ser. No. 123,467
Int. Cl.[3] D21H *3/78*
U.S. Cl. 162—149 12 Claims

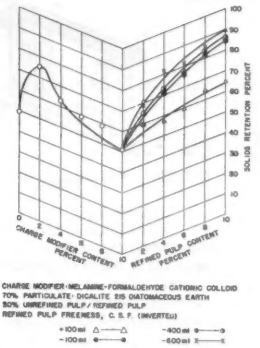
1. A method for the manufacture of microporous filter sheet of uniform porosity for the removal of submicron contaminants from liquids comprising at least 50% by weight of fine particulate distributed within an interfelted matrix of cellulose fibers, the method comprising:

providing a cationically disperse aqueous slurry mixture, comprising:

(a) an unrefined cellulose pulp having a Canadian Standard Freeness of +400 to +800 ml;

(b) a highly refined cellulose pulp having a Canadian Standard Freeness of from +100 to about −1000 ml, the weight ratio of said unrefined pulp to said highly refined pulp being from 2:1 to about 10:1; and

(c) fine particulate, constituting at least 50% by weight of the total solids; and forming said slurry into said microporous filter sheet by vacuum felting, and drying.



10. A microporous filter sheet of uniform porosity for the removal of submicron contaminants from liquids which comprises at least about 50 weight percent of fine particulate distributed within an interfelted matrix of cellulose fibers, said cellulose fibers being prepared from a cellulose pulp mixture comprising an unrefined cellulose pulp having a Canadian Standard Freeness of from about +400 to about +800 ml., and a highly fefined cellulose pulp having a Canadian Standard Freeness of from +100 to about −1000 ml., the weight ratio of unrefined pulp to highly refined pulp being from about 2:1 to about 10:1, said particulate and said pulp mixture being dispersed in a cationically disperse aqueous slurry mixture and formed into a microporous sheet by vacuum-felting.

4,309,248

PROCESS FOR MANUFACTURING BORON NITRIDE FIBER MATS USING CALENDER ROLLS

John L. Tworek, West Seneca, and Gordon R. Rignel, Clockport, both of N.Y., assignors to Kennecott Corporation, Stamford, Conn.

Filed Mar. 28, 1980, Ser. No. 134,896
Int. Cl.[3] D21F *11/00*
U.S. Cl. 162—157 R 10 Claims

1. A process for producing a boron nitride-bonded vitreous fiber mat from a web having a dispersion of said vitreous fibers with interstitial thermally bondable boron oxide fibers, comprising the steps of:

passing said web through the nip of a cooperating pair of calender rolls, at least one of which said rolls is heated to a temperature sufficient to soften said boron oxide fibers, so as to fuse together said vitreous fibers; and

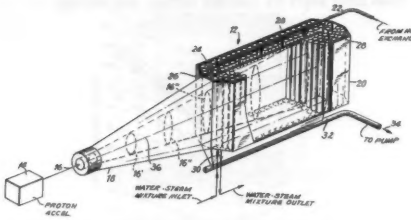
heating the calendered web in an anhydrous ammonia atmosphere at a sufficient temperature for a sufficient time tc convert essentially all of said interstitial boron oxide intc boron nitride.

4,309,249

NEUTRON SOURCE, LINEAR-ACCELERATOR FUEL ENRICHER AND REGENERATOR AND ASSOCIATED METHODS

Meyer Steinberg, Huntington Station; James R. Powell, Shoreham; Hiroshi Takahashi, Setauket; Pierre Grand, Blue Point, and Herbert Kouts, Brookhaven, all of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 4, 1979, Ser. No. 81,988
Int. Cl.[3] G21C *1/30;* G21G *1/00*
U.S. Cl. 376—192 40 Claims



1. An apparatus comprising:

(a) a source for supplying a beam of particles, said beam passing through a predetermined region; and,

(b) a plurality of jets of liquid metal also passing through said region in a direction substantially transverse of said beam, said metal responding to said beam by isotropically emitting a multiplicity of spallation neutrons per particle striking said jets,

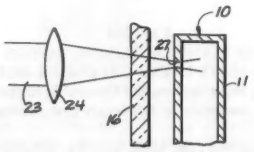
and said jets being distributed through said region so that the absorption of energy from said beam by said jets and the emission of neutrons by said jets is substantially uniform through said region.

4,309,250

BETWEEN-CYCLE LASER SYSTEM FOR DEPRESSURIZATION AND RESEALING OF MODIFIED DESIGN NUCLEAR FUEL ASSEMBLIES

John G. Bradley, Richland, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 5, 1979, Ser. No. 55,209
Int. Cl.[3] G21C *19/20*
U.S. Cl. 376—310 4 Claims



4. A system for extending the life of nuclear reactor fuel pins containing a quantity of nuclear fuel within gastight sealed cladding defining a hollow plenum region at one longitudinal end of the fuel pin, comprising:

removing each fuel pin from the reactor core at a selected fluence;

venting the removed fuel pin by laser puncturing its cladding along the plenum region thereof;

removing the gaseous fission by-products from the vented fuel pin;

collecting the removed by-products for processing thereof;

resealing the vented fuel pin by closing with laser welding the punctured hole formed therein; and

returning the fuel pin to the reactor core;

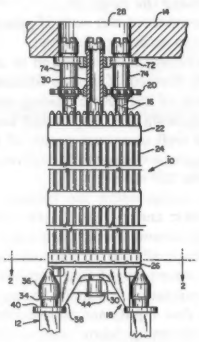
the fuel pins being arranged in parallel positions with the plenum regions thereof staggered longitudinally so as to expose a portion of the plenum region of each fuel pin to one side of the fuel assembly.

4,309,251

NUCLEAR FUEL ASSEMBLY HOLDDOWN APPARATUS

Andrew J. Anthony, Tariffville, and Kenneth A. Martin, Windsor, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Continuation-in-part of Ser. No. 959,971, Nov. 13, 1978. This application Nov. 1, 1979, Ser. No. 90,833
Int. Cl.[3] G21C *3/30*
U.S. Cl. 376—446 11 Claims



1. A nuclear fuel assembly to be located below a core upper alignment plate and on a core support stand, the stand having a square array of projections thereon forming mating surfaces, comprising:

a. a lower end fitting having an upper portion with an opening therethrough and a lower portion facing the support stand and including a square array of posts for placement adjacent to a respective array of projections;

b. actuating means extending from the upper end of the assembly through the opening in the lower end fitting and being movable relative thereto, the actuating means including,

(1) an actuating rod vertically movable in response to the position of the core upper alignment plate,

(2) rigid arms fixedly connected to the lower end of the actuating rod, each arm extending toward one of the posts, the arms having a lowermost position when the core upper alignment plate is in place;

c. locking means carried by the lower end fitting adjacent to each of a first set of two proximate posts, the external side of each latching means having a latch adapted to mate with the mating surface on the projections and having an internal side including a vertical land surface directly below the outer end of one of a first set of arms; and

d. bracing spring means carried by each of the other two proximate posts, each bracing means being located below the outer end of one of the second set of arms, and each bracing means having an orientation and spring rate such that when each of the second set of arms is in the lowermost position it biases the bracing spring to

(1) urge the proximate post into bracing abutment with the adjacent projection, and

(2) produce a substantially constant horizontal locking force component that is transmitted through the arms whereby one of the latches is urged into locking engagement with the mating surface on the proximate projection.

4,309,252

NUCLEAR REACTOR CONSTRUCTIONS

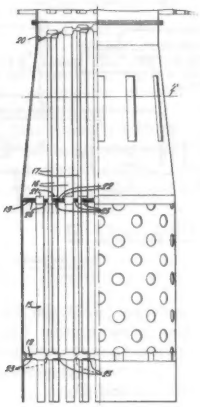
John E. Gilroy, Droylsden, England, assignor to Nuclear Power Company Limited, London, England

Filed Aug. 28, 1979, Ser. No. 70,434

Claims priority, application United Kingdom, Sep. 25, 1978, 38071/78

Int. Cl.[3] G21C *11/00, 15/00*

U.S. Cl. 376—290 2 Claims



1. A liquid metal-cooled nuclear reactor of the pool kind comprising

a primary vessel,

a pool of liquid metal coolant contained in the primary vessel,

a concrete vault housing the primary vessel and having an access port in the roof thereof, said access port being disposed directly above said nuclear fuel assembly,

a closure plug for said access port, and

a core cover structure suspended from said closure plug, said core cover structure comprising

a perforate generally cylindrical vertical shell,

a plurality of vertically extending parallel tubes, vertically spaced perforate transverse gridplates for bracing the tubes apart, at least the two lower most gridplates being submerged in the pool of coolant and a permeable shroud for the upper face of the uppermost of the submerged gridplates diposed to direct coolant flowing through the uppermost submerged gridplate over the upper surface thereof.

4,309,253

METHOD AND APPARATUS FOR TAR RECOVERY FROM RAW COKING GAS

Kurt-Günther Beck; Diethard Habermehl; Werner Kucharzyk, and Werner Siebert, all of Essen, Fed. Rep. of Germany, assignors to Bergwerksverband GmbH and Didier Engineering GmbH, both of Essen, Fed. Rep. of Germany

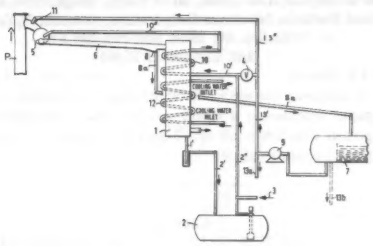
Filed Aug. 28, 1980, Ser. No. 182,324

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1979, 2939118

Int. Cl.[3] C10B *27/00*

U.S. Cl. 201—30 8 Claims

1. A method of recovering tar from raw gas produced by coking preheated coal, wherein the raw coking gas is precooled on entry into a gas collecting main by contact with circulating cooling water and is then passed for further cooling through an indirect raw gas cooler, the condensate formed during the two cooling steps including tar, water and solid components, wherein the improvement comprises preheating the condensate formed in the raw gas cooler by passing it into indirect heat exchange with the raw gas entering the raw cooler; admitting the preheated condensate into the gas collecting main; and supplying the preheated condensate from the



main to a tar separator in which tar is separated from the water content of the condensate.

4,309,254

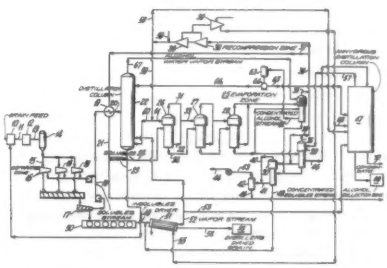
ALCOHOL RECOVERY PROCESS

Rodney A. Dahlstrom, Mansfield, and Jacob N. Rubin, Newton Highlands, both of Mass., assignors to Stone and Webster Eng. Corp., Mass.

Filed Apr. 17, 1980, Ser. No. 141,256

Int. Cl.[3] B01D *1/26;* C07C *29/80*

U.S. Cl. 203—47 11 Claims



1. In a distillation method for the production of anhydrous alcohol from a fermented feed wherein the fermented feed is distilled in a first distillation column to obtain an alcohol portion as an overhead, introducing said alcohol portion to at least one additional distillation column, removing as a bottom from said first distillation column a lean mash primarily containing dissolved organic matter, separating said lean mash into a first spent feed and a second spent feed, introducing said first spent feed as a sidestream into an evaporation zone having at least two successively decreasing pressure regions, and removing a concentrated first spent feed from a lower pressure region of said evaporation zone, the improvement comprising:

(a) separating said fermented feed into a first fermented feed containing dissolved organic matter and a second fermented feed containing insoluble organic matter;

(b) introducing said first fermented feed as a sidestream into said first distillation column and said second fermented feed into a drying zone;

(c) drying said second fermented feed in said drying zone at a pressure greater than the pressure of a lower region of said distillation column;

(d) removing a pressurized vapor stream from said drying zone; and

(e) introducing said pressurized vapor stream as a sidestream into the lower region of said first distillation column.

4,309,255

ELECTROCHROMIC RECORDING PAPER

Paul L. Gendler; Barbara D. Grant, both of San Jose, and Clinton D. Snyder, Los Gatos, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 10, 1980, Ser. No. 185,813

Int. Cl.³ G01D *15/06*

U.S. Cl. 204—2 **3 Claims**

1. A substrate for use in electrochromic recording comprising paper containing a water soluble leuco methylene blue compound which is a salt of 3,7-bis-(dimethylamino)-10-(2-sulfobenzoyl)-phenothiazine.

4,309,256

PROCESS FOR THE GALVANOPLASTIC DEPOSITION OF A GOLD ALLOY

Pino Aliprandini, 98D, route de Thonon,, CH-1222 Vesenaz, Geneva, Switzerland

Filed Jun. 11, 1980, Ser. No. 158,406

Claims priority, application Switzerland, Jun. 14, 1979, 5560/79

Int. Cl.³ G01N *3/62*

U.S. Cl. 204—44 **4 Claims**

1. A method comprising the galvano-plastic deposition of a gold-copper-cadmium alloy on a cathode in an aqueous bath containing 3 to 5 gr/l of gold in the form of alkali metal and gold cyanide, 50 to 60 gr/l of copper in the form of alkali metal and copper cyanide, 2 to 3 gr/l of cadmium in the form of alkali metal and cadmium cyanide, a chelating agent, an organic wetting agent and an amount from 18 to 22 gr/l of an alkali metal sulfite sufficient to maintain a cathodic current density of from 2 to 3 amp/dm^2 and an alloy deposition speed of greater than 0.65 micron thickness per minute, said bath being maintained at a temperature of from 70° to 75° C. and at a pH of from 9 to 11.

4,309,257

NOVEL PROCESS FOR THE PRODUCTION OF OPTICALLY SELECTIVE SURFACES

Michael Epstein, Holon, and Israel Dostrovsky, Rehovot, both of Israel, assignors to Yeda Research & Development Company Ltd., Rehovot, Israel

Filed Sep. 4, 1980, Ser. No. 183,987

Claims priority, application Israel, Sep. 10, 1979, 58214

Int. Cl.³ C25D *11/34*

U.S. Cl. 204—56 R **3 Claims**

1. A process for the production of optically selective surfaces for use in solar collectors, having a ratio of absorbance α_s to emittance ϵ of at least 10, which comprises effecting an anodic oxidation of copper, or of copper applied to any metal substrate in alkaline, sodium hydroxide bath of from 0.35 N to 1.5 N sodium hydroxide, at a temperature between 50° C. and 85° C. and at a current density of from 1 mA/cm^2 to 40 mA/cm^2 until a increase of resistance is experienced.

4,309,258

CONVERSION OF BENZIMIDAZOLE ISOMERS

James H. Wikel, Greenwood, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 4, 1980, Ser. No. 212,932

Int. Cl.³ B01J *19/12*

U.S. Cl. 204—158 R **4 Claims**

1. A method of isomerization which comprises irradiating the anti isomer of 1-isopropylsulfonyl-2-amino-6-(α-hydroxyiminobenzyl)benzimidazole in an organic solvent with a light source, which has a monochromatic wavelength of at least 280 nm to about 350 nm, to form the syn isomer of 1-isopropylsulfonyl-2-amino-6-(α-hydroxyiminobenzyl)benzimidazole.

4,309,259

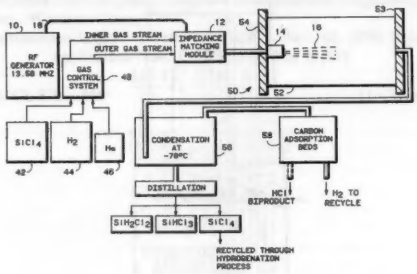
HIGH PRESSURE PLASMA HYDROGENATION OF SILICON TETRACHLORIDE

Kalluri R. Sarma, and M. John Rice, Jr., both of Tempe, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 9, 1980, Ser. No. 148,094

Int. Cl.³ C01B *33/107*

U.S. Cl. 204—164 **7 Claims**



1. A method for producing $SiHCl_3$ and SiH_2Cl_2 which comprises: creating a high pressure radio frequency hydrogen plasma at a pressure of about one atmosphere (about 101 KPa); and reacting H_2 and $SiCl_4$ in said high pressure radio frequency plasma to form $SiHCl_3$ and SiH_2Cl_2.

4,309,260

HEAT-CURABLE AQUEOUS COATING COMPOSITIONS

Wilfried Bartz, Marl, Fed. Rep. of Germany, assignor to Chemische Werke Huels, AG, Marl, Fed. Rep. of Germany

Filed Nov. 10, 1980, Ser. No. 205,129

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1979, 2945459

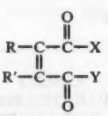
Int. Cl.³ C25D *13/00*

U.S. Cl. 204—181 R **11 Claims**

1. A binder for a heat-curable aqueous coating composition for metallic surfaces comprising:

(A) 60–95% by weight of a water-soluble and/or water-dispersible addition compound of

10–35% by weight of one or more α,β-unsaturated dicarboxylic acids have up to 8 carbon atoms and the formula



wherein R and R′ are an H atom, a halogen atom or an alkyl group; X and Y are a hydroxy group, an alkoxy group or an oxygen bond which is formed of X and Y together, assuming that X and Y are not simultaneously an alkoxy group; and

65–90% by weight of a butadiene polymer which is liquid at 20° C., contains at least 50 mole% of butadiene units and has a molecular weight of 400 to 6,000,

the addition compound being at least partially neutralized with a basic compound and partially esterified,

and

(B) 5–40% by weight of a water-soluble and/or waterdispersible crosslinking resin having, on the average, at least 2 chemically different reactive groups per mole,

wherein the addition compound (A) is esterified to 10–70 equivalent percent, based on its acid number, with one or more unsaturated alcohols of the formula

$$R^4-CH=C-CH-(CH)_n-OH$$
$$\quad\quad\quad

an offshore platform leg member during attachment thereto;

b. a chain anchor plate, connected to said channel member, said anchor plate being substantially rectangular and having angularly set end portions, said angular end portions being directed generally away from said chain anchor plate away from the platform leg to which said assembly is attached during operation;

c. gusset means for stiffening the connection between said channel member and said chain anchor plate;

d. a first opening in one of said angular end portions of said anchor plate;

e. a second opening in the opposite of said angular end portions of said anchor plate, said second opening being provided with an adjacent contiguous chain receptive slot;

f. an anchor bolt structurally but adjustably attached during operation to said first opening;

g. chain means for flexibly surrounding the platform to which said assembly is attached, said chain means being attached at one end portion to said anchor bolt and at the other end portion thereof to said chain anchor plate at one of said second openings being at least partially connected to said chain receptive slot;

h. at least one anode hanger projecting from said assembly and being structurally attached thereto for structurally supporting an anode;

i. cathodic protection means attached during operation to said hanger for providing cathodic protection to at least a portion of a platform leg to which said assembly is attached;

j. means for completing a circuit between said cathodic protection means and an offshore platform leg member to which said assembly is attached.

4,309,264

ELECTROLYSIS APPARATUS

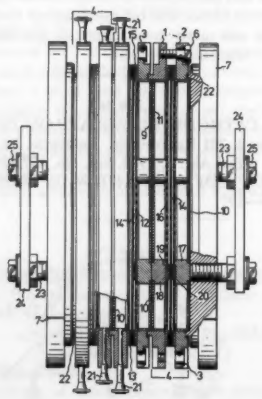
Werner Bender, Hofheim am Taunus; Dieter Bergner; Kurt Hannesen, both of Kelkheim; Wolfgang Müller, Bad Soden am Taunus, and Wilfried Schulte, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 10, 1980, Ser. No. 138,886

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1979, 2914869

Int. Cl.³ C25B *9/00, 11/06, 11/10*

U.S. Cl. 204—256 **8 Claims**



1. In electrolysis apparatus for the manufacture of chlorine from an aqueous alkali metal halide solution, including a plurality of electrolytic cells, each having an anode, a cathode and a separating wall interposed between said anode and cathode; each cell further including a housing formed of two shells for containing said anode, cathode and separating wall; means provided in said housing for feeding electrolysis starting materials therein and/or discharging the products of electrolysis therefrom; said shells having rims which, when the apparatus is assembled, clamp said separating wall therebetween; sealing elements positioned between said separating wall and the respective rims; and at least one pair of electrically non-conductive elements mechanically coupled to respective ones of said shells and having said separating wall disposed therebetween for establishing a spacing between said anode and cathode and a separation between said separating wall and each of said anode and cathode; the improvement wherein, in order to operate said cells at elevated pressures, said anode and cathode both extend to the rims of said shells and are in mechanical and electrically conductive contact with respective ones of said rims; electrically conductive spacer elements are fixed to said shells and are in mechanical and electrical contact with respective ones of said anode and cathode and also with respective ones of said pair of electrically non-conductive elements; each shell is provided with a substantially flat outer surface which, when the apparatus is assembled, is in substantially flat contact with the outer surface of a shell of an adjacent cell to provide mechanical support for said adjacent cell; and pressure compensation means are provided to mechanically support the respective shells of the cells disposed at the opposite ends of said apparatus.

4,309,265

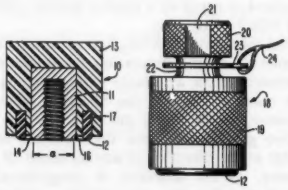
CATHODE MASK KNOB

John J. Prusak, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 15, 1981, Ser. No. 225,443

Int. Cl.³ C25D *17/00, 17/06*

U.S. Cl. 204—279 **7 Claims**



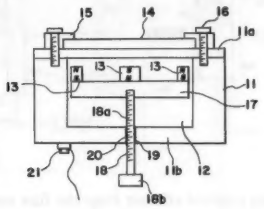
1. The device for holding the center portion of a record matrix in liquid-tight electrical contact with a threaded end of a cathode of an electroforming apparatus; said device being an integral member comprised of a metal insert, a dielectric shield and a resilient seal; said metal insert having an exposed threaded end portion shaped to threadably engage and mate with the threaded end of the cathode; said metal insert being mounted in said dielectric shield with said shield electrically insulating all the surfaces of the metal insert with the exception of the exposed end portion and said resilient seal being positioned in said shield adjacent to and surrounding the metal insert whereby when a matrix is placed on the surface of said cathode and said device is threaded with and tightened onto said cathode, the metal insert forces the matrix into electrical contact with the cathode; the seal member compresses to form a liquid-tight seal about the metal insert and the dielectric shield prevents plating of the metal insert.

4,309,266

MAGNETRON SPUTTERING APPARATUS

Takeshi Nakamura, Uji; Suehiro Kato, Nagaokakyo, and Hiroshi Nishiyama, Mukou, all of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Jul. 18, 1980, Ser. No. 170,154
Int. Cl.[3] C23C 15/00
U.S. Cl. 204—298 6 Claims



1. A magnetron sputtering apparatus for producing thin films comprising,

at least two spaced apart, opposing electrodes, a target from which film-forming atoms are ejected by ion-bombardment, mounted on one of said electrodes, said electrode mounting said target having a space provided therein,

a substrate mounted on the other of said electrodes,

a magnet movably disposed in said space, and

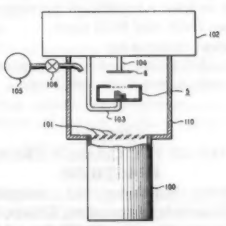
means for adjusting the distance between said magnet and said target, said means for adjusting said distance being operatively associated with said one electrode.

4,309,267

REACTIVE SPUTTER ETCHING APPARATUS

Gary D. Boyd, Rumson; Larry A. Coldren, Holmdel, and Frederick G. Storz, Englishtown, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 21, 1980, Ser. No. 170,586
Int. Cl.[3] C23C 15/00
U.S. Cl. 204—298 5 Claims



1. Apparatus for etching a substrate (2) which comprises:

anode means (6) disposed parallel to cathode means (5) in a chamber (110);

means (106) for introducing a gaseous etchant between said anode and said cathode means in said chamber;

means (102) for applying an rf voltage between said anode and said cathode means;

characterized in that:

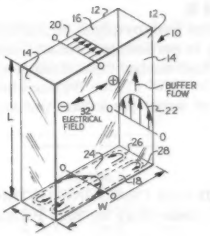
said cathode means comprises grid means (1) and an equipotential enclosure (8, 9 and 10), and means for supporting said substrate in said enclosure below said grid at an oblique angle to said grid, whereby said substrate may be etched.

4,309,268

SYSTEM FOR HYDRODYNAMIC COMPENSATION FOR ELECTROPHORESIS CRESCENT DISTORTION

David W. Richman, St. Louis County, Mo., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Aug. 15, 1980, Ser. No. 178,833
Int. Cl.[3] G01N 27/26, 27/40
U.S. Cl. 204—301 3 Claims



1. In an apparatus for conducting a continuous free flow electrophoresis separation procedure, the apparatus comprising:

a rectilinear buffer filled separation chamber defined by two elongate spaced apart parallel plates forming a front and a back to the chamber, two sides, an end comprising a collection manifold having a plurality of spaced apart collection tubes, an end comprising a buffer solution inlet manifold assembly;

two buffer filled electrode chambers, each disposed adjacent to one of the sides of the separation chamber and separated therefrom by a porous membrane;

at least one sample inlet port located at or near the inlet of the chamber;

the improvement comprising means whereby flow within the apparatus may be controllably varied laterally across the chamber such that crescent distortion for at least one of a plurality of individual components of a sample introduced through the sample inlet port is minimized.

4,309,269

COAL-OIL SLURRY PIPELINE PROCESS

Bernard L. Denker, Key Biscayne, Fla., and Peter Maruhnic, Pennington, N.J., assignors to Hydrocarbon Research, Inc., Lawrenceville, N.J.

Filed May 30, 1979, Ser. No. 43,856
Int. Cl.[3] C10G 1/00, 1/06; C10L 1/32, 1/14
U.S. Cl. 208—8 LE 13 Claims

1. A process for transporting coal and oil together in slurry form through a pipeline, comprising the steps of:

(a) introducing oil into the pipeline at its inlet end;

(b) adding sufficient coal in particulate form to the oil flowing through the pipeline to provide a transportable coal-oil slurry;

(c) maintaining residence time of said coal-oil slurry for at least about 15 hours and temperature and pressure conditions in the pipeline sufficient for the oil to donate hydrogen to the coal;

(d) maintaining sufficient velocity and flow turbulence of the coal-oil slurry to substantially prevent solids settling in the pipeline and to produce fluid friction heating whereby the coal-oil slurry attains a temperature ranging from about 350° F. to about 600° F. to produce at least partial liquefaction of the coal; and

(e) removing the coal-oil slurry from the pipeline at its terminal end.

4,309,270

FLASH PYROLYSIS OF AGGLOMERATING COAL

Ralph J. Tyler, North Epping; Ian W. Smith, Avalon Beach, and James H. Edwards, East Ryde, all of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Australia

Filed Jun. 12, 1979, Ser. No. 47,665
Claims priority, application Australia, Jun. 13, 1978, PD4702
Int. Cl.[3] C10G *1/00*; C10B *47/24*
U.S. Cl. 208—8 R 4 Claims

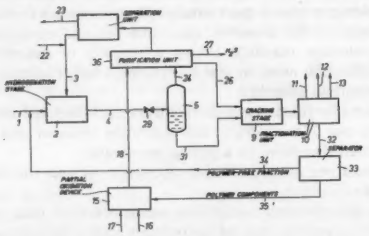
1. A method of flash pyrolysis of coal comprising feeding a stream of coal, in particulate form and suspended in an inert carrier, into a fluidised-bed maintained at a temperature in the range 400° C. to 1000° C., the fluidised-bed being formed of inert particles of larger particulate size and density than the coal.

4,309,271

METHOD FOR CRACKING HYDROCARBONS

Armin Dorner, Strasserberg 4e, 8023 Baierbrunn, Fed. Rep. of Germany

Filed Sep. 21, 1979, Ser. No. 77,823
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1978, 2840987
Int. Cl.[3] C10G *9/36*
U.S. Cl. 208—57 7 Claims



1. In a method for cracking hydrocarbons, in which the hydrocarbons are first hydrogenated and subsequently are thermally cracked, the improvement comprising converting at least a part of the residue of the thermal cracking to a gas mixture by partial oxidation, desulfurizing and separating a hydrogen-rich fraction from the gas mixture and conducting the hydrogen-rich fraction to the hydrogentation step.

4,309,272

SEQUENTIAL THERMAL CRACKING PROCESS

Axel R. Johnson, North Babylon, N.Y., and Herman N. Woebcke, Stamford, Conn., assignors to Stone & Webster Engineering Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 82,049, Oct. 5, 1979, Pat. No. 4,268,375. This application Aug. 15, 1980, Ser. No. 178,492
Int. Cl.[3] C10G *9/16, 9/30*
U.S. Cl. 208—72 11 Claims

1. In a TRC process wherein the temperature in the reaction chamber is between 1300° and 2500° F. and wherein the hydrocarbon fluid feed or the hydrosulfurized residual oil along with the entrained inert solids and the diluent gas are passed through the reaction chamber for a residence time of 0.5 to 2 seconds, the improvement wherein the step of cracking hydrocarbon feed to produce olefins comprises:

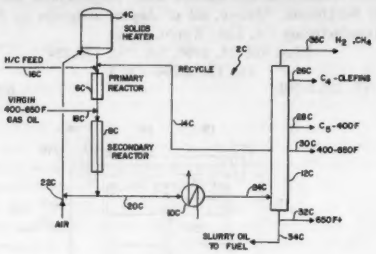
a. delivering hydrocarbon feed to a first zone;

b. thermally cracking the hydrocarbons in the first zone at temperatures above 1,500° F.;

c. discharging the cracked effluent from the first zone to a second zone;

d. delivering a second hydrocarbon feed to the entry of the second zone; and

e. mixing the cracked effluent from the first zone and the second hydrocarbon feed in the second zone;



whereby the cracked effluent from the first zone is quenched and the second hydrocarbon feed is cracked at low severity.

4,309,273

REMOVAL OF CRACKING CATALYST FINES

Stone P. Washer, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 8, 1980, Ser. No. 184,837
Int. Cl.[3] C10G *11/18*
U.S. Cl. 208—78 11 Claims

1. In a cracking process comprising

(a) contacting a hydrocarbon feedstream and a cracking catalyst under cracking conditions in a cracking zone to produce a mixture of cracked hydrocarbon and cracking catalyst,

(b) separating said mixture in a separation zone into a cracking catalyst mass containing coke and a fluid mass consisting essentially of said cracked hydrocarbon and cracking catalyst fines,

(c) regenerating said cracking catalyst mass by contacting it with a free oxygen containing gas such as to combust at least a significant portion of said coke and to thereby produce a regenerated cracking catalyst mass,

(d) reintroducing said regenerated cracking catalyst mass into said cracking zone as at least part of said cracking catalyst moves in a loop from the cracking zone to the regeneration zone and back to the cracking zone,

(e) separating at least a significant portion of said cracking catalyst fines from said fluid mass,

the improvement comprising

(f) directly withdrawing and removing said so-separated cracking catalyst fines from said loop.

4,309,274

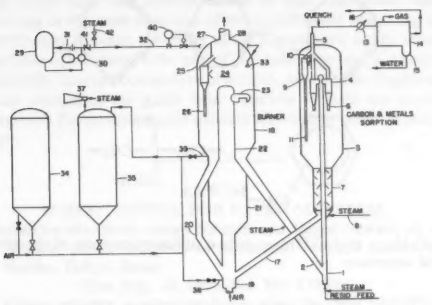
PREPARATION OF FCC CHARGE FROM RESIDUAL FRACTIONS

David B. Bartholic, Watchung, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Edison, N.J.

Continuation-in-part of Ser. No. 38,928, May 14, 1979, Pat. No. 4,243,514, which is a continuation-in-part of Ser. No. 875,326, Feb. 6, 1978, abandoned. This application Apr. 10, 1980, Ser. No. 139,043
Int. Cl.[3] C10G *29/16*
U.S. Cl. 208—80 9 Claims

1. A process for upgrading a petroleum charge of a crude oil or a residual fraction thereof which contains high boiling components of substantial Conradson Carbon number which comprises emulsifying water in said charge as the internal phase of a water in oil emulsion, contacting the emulsion of water in said charge in a confined rising vertical column with a finely divided solid contact material consisting essentially of an inert solid material having a microactivity for catalytic cracking not substantially greater than 20 at low severity, including a temperature of at least about 900° F. for a period of

time less than 2 seconds and less than that which induces substantial thermal cracking of said charge, at the end of said period of time separating from said inert solid a decarbonized



hydrocarbon fraction of reduced Conradson Carbon number as compared with said charge and reducing temperature of said separated fraction to a level below that at which substantial thermal cracking takes place to terminate said period of time.

4,309,275

HYDROCARBON CONVERSION WITH CRYSTALLINE SILICATES TO PRODUCE OLEFINS

Bernard F. Mulaskey, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Apr. 28, 1980, Ser. No. 144,473
Int. Cl.³ C10G *11/02, 47/02*
U.S. Cl. 208—109 **10 Claims**

1. A process for producing olefins from normal paraffins, slightly branched paraffins, and mixtures thereof, comprising contacting a feed which comprises said paraffins with silicalite, and producing an effluent of greater olefin content than said feed.

4,309,276

HYDROCARBON CONVERSION WITH LOW-SODIUM SILICALITE

Stephen J. Miller, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Apr. 28, 1980, Ser. No. 144,474
Int. Cl.³ C10G *11/02, 47/02*
U.S. Cl. 208—109 **12 Claims**

1. A process for producing olefins from normal paraffins, slightly branched paraffins, and mixtures thereof, comprising contacting a feed which comprises said paraffins with silicalite containing less than about 0.1 weight percent sodium, and producing an effluent of greater olefin content than said feed.

4,309,277

CONVERSION OF HYDROCARBONS WITH A CATALYST COMPRISING AN ALUMINA-ZEOLITE, A GROUP VI-B METALLIC COMPONENT AND A GROUP VIII METALLIC COMPONENT

Mark J. O'Hara, Mt. Prospect, and Russell W. Johnson, Hoffman Estates, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 36,121, May 4, 1979, abandoned. This application Aug. 18, 1980, Ser. No. 179,319
Int. Cl.³ C10G *47/20*
U.S. Cl. 208—111 **14 Claims**

14. A process for the hydrocracking of a hydrocarbon oil comprising contacting the hydrocarbon oil under hydrocracking conditions at an elevated temperature and pressure with a hydrocracking catalyst prepared by a method comprising:

(a) extruding alumina and a sodium form zeolite;

(b) calcining the resulting extrudate;

(c) contacting the resulting calcined extrudate with a sodium ion exchange solution to reduce the sodium concentration of said extrudate;

(d) contacting the resulting extrudate from step (c) with a rare earth salt solution;

(e) calcining the resulting extrudate from step (d);

(f) contacting the resulting extrudate from step (e) with a sodium ion exchange solution to further reduce the sodium concentration of the extrudate to less than about 0.5 wt. %; and

(g) incorporating at least one metal component selected from Group VI-B and at least one metal component selected from Group VIII on the resulting extrudate from step (f).

4,309,278

CATALYST AND HYDROCONVERSION PROCESS UTILIZING THE SAME

Willard H. Sawyer, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 155,206, Jun. 2, 1980, Pat. No. 4,276,201, which is a continuation-in-part of Ser. No. 66,572, Aug. 15, 1979, abandoned. This application Nov. 24, 1980, Ser. No. 210,130
Int. Cl.³ C10G *45/08, 47/10*
U.S. Cl. 208—111 **12 Claims**

1. A hydroconversion process which comprises contacting a hydrocarbonaceous feedstock in the presence of hydrogen at ' hydroconversion conditions with a catalyst comprising:

(a) a support having initially a surface area ranging from about 350 to about 500 m^2/g, a total pore volume of about 1.0 to about 2.5 cc/g, not more than about 0.2 cc/g of said pore volume being in pores having a diameter of more than about 400 Angstroms, said support comprising agglomerates of alumina and silica, said silica comprising less than about 10 weight percent of said support, and

(b) a hydrogenation component selected from the group consisting of metal, metal oxide, metal sulfide of a Group VIB metal and elemental metal, metal oxide and metal sulfide of a Group VIII metal and mixtures thereof of the Periodic Table of elements.

4,309,279

OCTANE AND TOTAL YIELD IMPROVEMENT IN CATALYTIC CRACKING

Arthur W. Chester, Cherry Hill; William E. Cormier, Jr., Clarksboro, and William A. Stover, Woodbury, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 50,588, Jun. 1, 1979, abandoned. This application Dec. 5, 1979, Ser. No. 100,585
Int. Cl.³ C10G *11/05*
U.S. Cl. 208—120 **14 Claims**

1. In a process for catalytic cracking of petroleum fractions having an initial boiling point of at least 400° F., a 50% point of at least 500° F. and an end point of at least 600° F. in the presence of a conventional cracking catalyst comprising at least about 5 weight percent of a catalytically active component selected from crystalline zeolite, silica-alumina and mixtures thereof, under cracking conditions, the improvement wherein separate additive catalyst comprising a zeolite characterized by a Constraint Index of about 1 to 12 and a silica to alumina mole ratio greater than about 12 is added to said conventional cracking catalyst in the cracking process in an amount which provides the zeolite component of said separate additive catalyst at from about 0.05 weight percent to about 1.0 weight percent of the conventional cracking catalyst in the cracking process.

4,309,280

PROMOTION OF CRACKING CATALYST OCTANE YIELD PERFORMANCE

Edward J. Rosinski, Pedricktown, N.J., and Albert B. Schwartz, Philadelphia, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 18, 1980, Ser. No. 170,220
Int. Cl.[3] C10G 11/05
U.S. Cl. 208—120 25 Claims

1. In an improved process for increasing gasoline octane number in catalytic cracking of a hydrocarbon chargestock in the presence of a cracking catalyst comprising an active component and a matrix and under cracking conditions, the improvement which comprises addition to said catalyst of a shape selective additive promoter characterized by a particle size of less than 5 microns, a silica to alumina mole ratio greater than about 12 and a constraint index within the approximate range of 1 to 12, said additive promoter not being intimately combined with a substantial amount of other solid prior to contact thereof with said cracking catalyst and wherein the weight ratio of said additive promoter to the said cracking catalyst is in the range between about 1:10000 and about 1:100.

4,309,281

SELECTIVE SORPTION BY ZEOLITES

Ralph M. Dessau, Edison, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 19, 1979, Ser. No. 105,190
Int. Cl.[3] C07C 7/13
U.S. Cl. 208—310 Z 9 Claims

1. A process for the selective separation of a non-aromatic compound in admixture with an aromatic compound, said compounds selected from the group consisting of hydrocarbons and substituted hydrocarbons, which comprises contacting the mixture with zeolite ZSM-11, said zeolite characterized by a silica to alumina mole ratio of at least about 12, to effect the selective sorption of said non-aromatic compound by said zeolite.

4,309,282

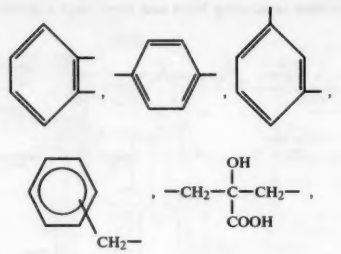
PROCESS OF PHOSPHATE ORE BENEFICIATION IN THE PRESENCE OF RESIDUAL ORGANIC POLYMERIC FLOCCULANTS

Eugene L. Smith, Jr., Milford, Conn.; Andrew C. Poulos, Lakeland, Fla., and Richard E. Ellwanger, Tucson, Ariz., assignors to American Cyanamid Company, Stamford, Conn.

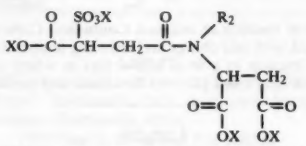
Filed Apr. 14, 1980, Ser. No. 139,957
Int. Cl.[3] B03D 1/02
U.S. Cl. 209—166 6 Claims

1. A process for the froth flotation of phosphate values from an aqueous ore pulp containing about 0.1 to 5 parts per million of residual organic polymer flocculants which comprises: conditioning said ore pulp with from about 0.1 to 5.0 pounds of collector per ton of ore, said collector comprising, in combination, from about 99.0 to 1.0 weight percent of a fatty acid derived from vegetable or animal oils and, correspondingly, from about 1.0 to 99.0 weight percent of a surface active agent wherein the surface active agent is either a partial polycarboxylic acid ester of the general structure:

wherein R_2 is a linear or branched radical having from 8 to 23 carbon atoms, inclusive, n is an integer of from 0 to 8 inclusive, p is an integer of from 0 to 8 inclusive, wherein n+p is equal to or greater than (1) and R_1 is a bivalent grouping selected from $—CH_2—_m$ wherein m is an integer of 1 to 6, —CH=CH,



$—C_6H_8—$, and $C_6H_{10}—$, or is a sulfosuccinamate of the general structure:



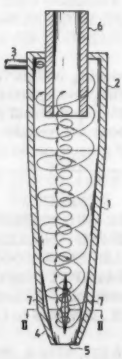
wherein R_2 is a linear or branched, saturated or unsaturated radical having from 8 to 23 carbon atoms, inclusive, and X is selected from the group consisting of hydrogen, sodium, potassium and ammonium and thereafter froth floating the phosphate values.

4,309,283

HYDROCYCLONE

Pentti Vikiö; Matti Lankinen, and Juhani Kyytsönen, all of Savonlinna, Finland, assignors to Enso-Gutzeit Osakeyhtio, Helsinki, Finland

Filed Aug. 15, 1980, Ser. No. 178,360
Claims priority, application Finland, Aug. 20, 1979, 792571
Int. Cl.[3] B04C 5/103, 5/14
U.S. Cl. 209—211 5 Claims



1. An improvement in a hydrocyclone for dividing a fibre suspension into a lighter acceptable fraction containing fibres and a heavier reject fraction containing dirt substances, said hydrocyclone comprising a housing forming a separation chamber, the housing including a cylindrical part provided with at least one inlet passage for the tangential input of the fibre suspension to be divided into different fractions and a tube for removal of the lighter fraction coaxially disposed in the cylindrical part, and a sorter cone on the extension of said

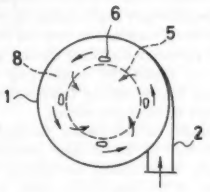
cylindrical part, and a conical nozzle adjoining the apex of the sorter cone which nozzle is more abruptly tapering than the sorter cone and which at its apex has a removal aperture for the heavier fraction, there being disposed on the inner surfaces of the sorter cone and conical nozzle at least one guide vane running in the axial direction of the cyclone and imparting to the heavier fraction, travelling along a spiral path on the inner surfaces of the sorter cone and of the conical nozzle, a radially inwardly directed component of motion, wherein the improvement comprises the guide vane common to both the sorter cone and the conical nozzle extends across their point of juncture.

4,309,284

SCREEN DEVICE FOR PAPER MATERIAL

Katsuhiko Morimoto; Sadaji Nishida, and Shigeo Nawate, all of Mihara, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 20, 1980, Ser. No. 179,911
Claims priority, application Japan, Aug. 30, 1979, 54-110713
Int. Cl.³ B07B *1/20*
U.S. Cl. 209—273 **2 Claims**



1. In a screen device for a paper material which includes a substantially cylindrical housing equipped therein with a raw paper material inlet at its one end and with a refined paper material outlet and an impurity outlet at the other end, a cylindrical screen member disposed in said housing so as to divide it into an exterior chamber communicating with said raw paper material inlet and with said impurity outlet, and an interior chamber communicating with said refined paper material outlet, and a screen surface-cleaning mechanism disposed in such a manner as to rotate with a small gap between it and the screen surface of said screen member; the improvement wherein the screen open portions of said screen member are shaped into continuous slant slits and the slant angle is brought into substantial conformity with the flowing direction of the paper material flowing on the screen surface.

4,309,285

APPARATUS FOR REMOVING CONTAMINANTS FROM WATER

Patrick J. Gallaher, Sr., Toledo, Ohio, assignor to Pat-Air, Inc., Waterville, Ohio

Filed Aug. 27, 1979, Ser. No. 69,971
Int. Cl.³ C02B *1/34*
U.S. Cl. 210—123 **2 Claims**

1. Apparatus for treating water having disagreeable odor and an objectionable color comprising:

a. a vertically disposed closed treatment tank,

b. a pipe for feeding raw water to an intermediate portion of the tank from the outside,

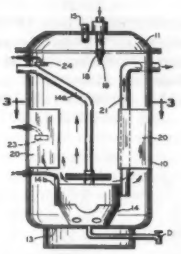
c. a power driven pump for forcing water through said feed pipe,

d. a nozzle on the discharge end of said pipe for comminuting the water into a mist-like fog,

e. an aerator submerged into the water in the lower portion of the tank and having a power driven rotatable disc provided with radial channels to expel air jetwise,

f. a pipe to deliver atmospheric air to said aerator extending from the outside of the tank,

g. an annular row of baffles surrounding said aerator in spaced relation comprising circumferentially spaced, V-shaped plates spaced above the bottom of the tank below said nozzle and with the apices of the V's disposed towards the center of the tank and with the opposite ends juxtaposed to the tank wall, thereby providing impingement surfaces for the air and water jets, and channels for passage of hydraulic streams created within the tank,



h. an exhaust pipe for gases in the upper portion of said tank,

i. a pipe for treated water extending from the lower portion of the tank to the outside,

j. a power driven pump for withdrawing water from said last pipe, and

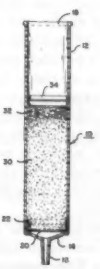
k. float operation switch means for controlling said pump of paragraph c to maintain a predetermined water level in the tank, below said nozzle and above the lower portion of said baffles.

4,309,286

LOWER SEALING MEANS FOR CHROMATOGRAPHIC COLUMN

Harry J. Lenihan, Jr., 2356 Kuhlview Dr., Pittsburgh, Pa. 15237, and Thomas C. Evans, Jr., Wingdate Dr., Wexford, Pa. 15090

Filed May 20, 1980, Ser. No. 151,738
Int. Cl.³ G01N *31/08*
U.S. Cl. 210—198.2 **2 Claims**



1. In a disposable chromatographic column, including a generally cylindrical hollow column constructed of polyolefin material and being open at its inlet and outlet ends, said column having a substantially uniform interior diameter throughout its length but terminating with a tapered portion at its outlet end, said chromatographic column being adapted to receive an adsorbent matrix for use in a two-phase fluid separation process, an improved lower sealing means comprising:

a disc of phase separation paper having a diameter slightly less than the diameter of said column and transversely

disposed within said column adjacent the point at which said tapered portion commences; and

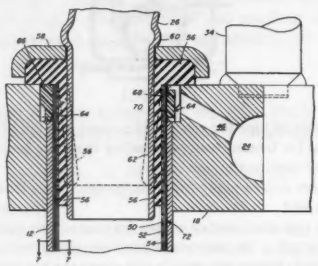
a retaining ring having a flat base portion with a central opening of lesser dimension than said paper disc and having a circumferential flange formed of polyolefin material for sealingly engaging the interior of said column, said ring being dimensioned to be inserted into said column from said inlet end, with said flange extending away from outlet end of said column, for sealing contact with said paper disc at its periphery.

4,309,287

REVERSE-OSMOSIS TUBULAR MEMBRANE

Martin Roos, Burlington; William Eykamp, Arlington, and William W. Cooper, IV, Sudbury, all of Mass., assignors to Abcor, Inc., Wilmington, Mass.

Filed May 1, 1980, Ser. No. 145,829
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—247 **18 Claims**



1. In a membrane module for the separation of fluids by reverse osmosis or ultrafiltration, which module comprises:

(a) a plurality of outer pressure-containing tubes having a one end and another end;

(b) a plurality of membrane tubes containing a tubular membrane therein for the separation of fluids from a feed stream into a concentrate fraction and a permeate fraction, the membrane tubes having a one end and another end, the membrane tubes positioned within the outer tubes and spaced apart from the interior wall surface of the outer tubes, to define a thin, annular, axial, permeate-flow channel about the exterior wall of the membrane tubes;

(c) tube-plate means at the one and the other ends of the module, to retain the one and the other ends of the outer tubes in a generally parallel, spaced-apart relationship, the plate means having an outer face and characterized by a plurality of tube passageways therein, to receive the one or the other ends of the membrane tubes, and characterized by a permeate-collection passageway therein having a permeate outlet, whereby permeate from each of the thin, annular, permeate-flow channels may be collected in the permeate-collection passageway and discharged from the permeate outlet;

(d) connecting means to provide for fluid-flow communication between the membrane tubes at each end thereof, so as to permit serial flow between the membrane tubes of the module;

(e) a feed inlet to provide for the introduction of a feed stream into the interior of the one or the other end of one of the membrane tubes; and

(f) a feed outlet to provide for the withdrawal from the one or the other end of one of the membrane tubes of a concentrate fraction from the interior of the membrane tube, after serial-flow passage of the feed stream through the plurality of membrane tubes in the module, the improvement which comprises

(i) a radial, permeate-collector cavity in the tube passageway of the plate means and at and surrounding the one and the other ends of the membrane tubes in the tube passageway,

(ii) an open-mesh-material means disposed in the annular, permeate channel and peripherally about the exterior surface of the membrane tubes, the open-mesh material extending into the tube passageway at the one and the other ends, to permit axial flow of the permeate toward the one or the other ends of the membrane tubes and into the radial, permeate-collector cavity at each end,

(iii) a radial, permeate, channel passageway, the passageway extending radially outwardly from each collector cavity about the one or the other end of the membrane tubes to the permeate-collector passageway in the tube-plate means at the one or the other end,

(iv) a grommet-sealing means extending into the interior of the membrane tubes at the one and the other ends thereof,

(v) the connecting means having extending, skirt-element means at the one and the other ends thereof, the skirt elements extending within the grommet-sealing means and into a close, sealing relationship therewith, and forcing the sealing grommet radially outwardly and into a close, sealing relationship with and against the interior of the membrane tube in the tube passageway, but with a force insufficient to compact the open-mesh material peripherally surrounding the membrane tube in the tube passageway and to prevent the flow of permeate to the permeate-collector cavity, and

(vi) means to retain the connecting means inwardly toward and into a sealing relationship with the outer face of each of the plate means,

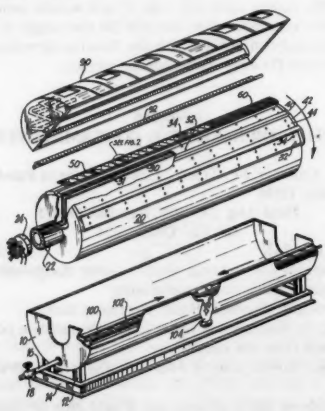
whereby permeate, which passes through the membrane tube, is collected in the annular permeate-flow channel about the tube, flows axially toward one or the other end, or both ends, of the respective tubes, is collected in the radial, permeate-collector cavity at the end of the membrane tube, and flows from the collector cavity through the radial, permeate passageway into the permeate-collection passageway of the tube-plate means.

4,309,288

ROTARY DRUM FILTER

Douglas G. Ryan, Rockaway, and Derek J. Watridge, Randolph, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Aug. 7, 1980, Ser. No. 175,941
Int. Cl.³ B01D *33/08*
U.S. Cl. 210—39 S **13 Claims**



1. In a rotary filter means of the type comprising:

(a) a filter vat adapted to contain a filterable slurry;

(b) a rotatable filter drum at least partially disposed in said

filter vat, said drum having circumferential openings disposed therein in substantial alignment with fluid conduits disposed in said drum, said drum including a filter grid disposed on the outer periphery of said filter drum;

(c) means to rotate said drum in said filter vat;

(d) fluid conduits disposed in said drum in substantial alignment with the circumferential openings in the drum;

(e) a valve means communicating with said fluid conduits for regulation of the fluid flow through said conduits and through the circumferentially disposed openings in said filter drum;

(f) a filter cloth disposed over the circumferential openings in said filter drum and over said filter grid, said cloth maintained in spaced-apart relationship from said filter drum by said filter grid; and

(g) means for removing the filter cake from the filter cloth, whereby, during one phase of each rotation of said filter drum, slurry is drawn onto the filter cloth with at least a portion of the filtrate passing through the openings into the fluid conduits while the solids form a filter cake on the filter cloth and during another phase of each rotation high velocity fluid passes from the conduit through the circumferential openings to lift the filter cake from the filter cloth, the improvement wherein a baffle means is disposed between the filter grid and the filter cloth in substantial alignment with at least one of the openings in the filter drum said filter cloth communicating with said baffle means and with the filter grid, said baffle means having a surface generally coextensive with the outwardly extending surface of said filter grid to decrease the kinetic energy of the fluid passing from the conduits through at least one of the circumferential openings prior to the fluid contacting the filter cloth to thereby decrease the erosive effects of the fluid on said filter cloth.

4,309,289

METHOD OF FILTERING OIL FROM OIL-AND-WATER EMULSIONS

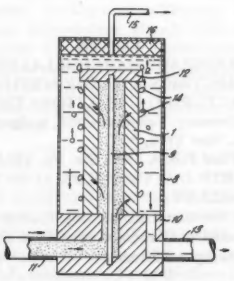
Brian A. Head, Maidstone, England, assignor to Whatman Reeve Angel Limited, Maidstone, England

Continuation of Ser. No. 874,846, Feb. 3, 1978, abandoned. This application Mar. 7, 1980, Ser. No. 128,138

Claims priority, application United Kingdom, Apr. 7, 1977, 5008/77

Int. Cl.³ B01D *17/04*

U.S. Cl. 210—649 **11 Claims**



1. A method of separating an oil phase from an oil and water emulsion stabilized by the presence of a detergent, which method comprises:

(a) passing the stabilized oil and water emulsion through the wall of a prefilter structure, the prefilter structure having a predetermined thickness and made from a fibrous material, upon which fibrous material said oil phase to be separated exhibits an energy of adhesion of from about 2 to 50 ergs/cm^2, said fibrous material selected from the group consisting of polypropylene fibres, nylon fibres or glass fibres coated with nylon or polypropylene, said fibrous material comprising fibres having a dimension and a packing density such that, upon passage of the oil and water emulsion through said prefilter wall, oil droplets having diameter of greater than about 1 μm are captured, coalesced and larger oil droplets formed and released;

(b) passing said oil and water emulsion and the larger oil droplets released from the prefilter through an adjacent peripheral wall of a filter tube under pressure, wherein the larger oil droplets released from the prefilter are coalesced and the oil phase separated under pressure, as the oil emulsion and the larger oil droplets are passed through the filter tube wall, in order to provide for the separation of the oil phase from the oil and water emulsion, with the oil phase coalescing after passage of the oil and water emulsion through said filter tube wall, the filter tube having a filter tube wall and an internal bore, which filter tube comprises a plurality of nonwoven, randomly disposed, glass fibres having interstices therebetween, and said fibres bonded together at the fibre crossover points by a fibre-binding agent, the fibres having a diameter of about 0.01 to 10 microns; and

(c) collecting and removing the coalesced oil removed from the oil and water emulsion and permitting the passage of the essentially oil-free water phase from the oil and water emulsion.

4,309,290

MAGNETICALLY SUPPORTED PARTICLE MATRIX FOR ACCUMULATING OR AFFECTING SUBSTANCES DISSOLVED OR FINALLY DISPERSED IN LIQUIDS OR GAS

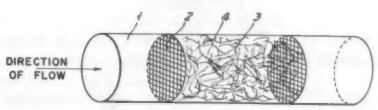
Dieter Heitkamp, Jülich, Fed. Rep. of Germany, assignor to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Division of Ser. No. 854,095, Nov. 23, 1977, Pat. No. 4,201,827. This application Jan. 10, 1980, Ser. No. 111,111

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1976, 2653551

Int. Cl.³ B03C *1/30, 1/00*

U.S. Cl. 210—695 **2 Claims**



1. A process for recovering dissolved metal from solutions selected from the group consisting of brackish water, seawater, fresh water and industrial effluent water by causing said solution to flow through a matrix of particles in which the particles are magnetic and are magnetically adherent to a supporting web consisting of flexible fibers of a chemically inert material in which a permanently magnetic powder is embedded.

4,309,291

METHOD OF AND APPARATUS FOR CONTINUOUS FLOW FLOCCULATION AND CLARIFICATION

Ronald F. Probstein, Brookline, and Michael A. Delichatsios, Cambridge, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

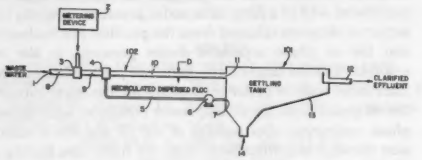
Continuation of Ser. No. 446,666, Feb. 28, 1974, abandoned. This application Jun. 29, 1977, Ser. No. 811,413

Int. Cl.³ C02F *1/52*

U.S. Cl. 210—713 **5 Claims**

1. A method of continuously removing solid particles which can be flocculated from a liquid mixture containing said solid particles, comprising providing a flocculation pipe that discharges into a settling tank, the pipe having peripheral walls

that delimit a substantially uniform, open, flow cross-section throughout the length of the pipe and being devoid of internal structure within the confines of said peripheral walls, continuously introducing said mixture and a required quantity of coagulant and/or coagulant aid into said pipe remote from the discharge into the settling tank and causing the contents of the pipe to flow through the pipe at a flow velocity sufficient to



produce turbulent flow conditions throughout the pipe, with a rate of turbulent energy dissipation per unit mass in the pipe and a length of flow in the pipe great enough to ensure that flocculation occurs substantially entirely in the pipe, rather than in the settling tank, and with negligible deposition of particles and floc in the pipe, said rate of energy dissipation being less than about 70 erg/sec.gm to avoid particle and floc breakup.

4,309,292

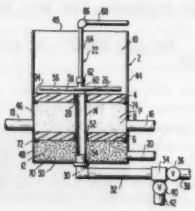
FILTERING METHODS

Forrest B. Stannard, Ft. Lauderdale, and Edward J. Highstreet, Coral Springs, both of Fla., assignors to The Dehydro Corporation, Ft. Lauderdale, Fla.

Division of Ser. No. 967,202, Dec. 7, 1978, Pat. No. 4,208,288. This application Jan. 10, 1980, Ser. No. 110,902

Int. Cl.³ B01D *23/24*

U.S. Cl. 210—792 **7 Claims**



1. A method for removing finely divided solids from liquid suspensions thereof which comprises:

providing a filtering system comprising a first horizontal rigid filter plate as the bottom of a liquid holding chamber,

flowing liquid influent containing said solids to be filtered into said chamber through a vertical conduit that discharges upwardly into said chamber through a central opening in said filter plate,

allowing liquid contained in said chamber to pass downwardly through said filter plate as liquid effluent containing substantially less solids than said liquid influent by removal of solids from said liquid influent upon the top surface of said filter plate,

allowing a filter cake to form on the top surface of said filter plate,

discharging said effluent from said filtering system at a level below said filter plate,

discontinuing said flowing of influent into said chamber and emptying said chamber to begin a washing cycle,

spraying wash liquid onto said filter plate from above to wash filter cake therefrom, and

discharging wash liquid effluent from said filtering system downwardly through said vertical conduit.

4,309,293

PROCESS FOR REDUCING THE CORROSIVITY OF PHENOL SULFIDES

Milton Braid, Westmont, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 10, 1979, Ser. No. 102,209

Int. Cl.³ C10M *1/42, 1/38, 5/22, 7/40*

U.S. Cl. 252—48.2 **16 Claims**

1. A method of improving and/or substantially eliminating the metal corrosivity of sulfurized phenols by treating said sulfurized phenols or mixtures thereof with a C_1–C_{20} alkyl vinyl ether said treatment comprising contacting said phenol with said ether in a suitable reaction zone at a temperature of from about 20° to 150° C. in a mole ratio of alkyl vinyl ether to sulfurized phenol of from about 0.1 to about 20:1 and thereafter isolating and recovering said treated sulfurized phenol.

4,309,294

N,N'-DISUBSTITUTED 2,4'-DIAMINODIPHENYL ETHERS AS ANTIOXIDANTS

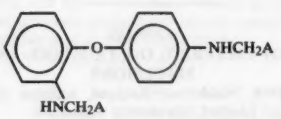
John T. Roberts, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jul. 24, 1980, Ser. No. 171,863

Int. Cl.³ C10M *1/32*

U.S. Cl. 252—51.5 R **4 Claims**

1. A composition of matter comprising a major amount of a lubricating oil or grease thereof and a minor, antioxidant amount of an additive consisting essentially of an ether of the structure:



wherein A is a radical selected from the group consisting of pyridine, thiophene, pyrrole, furan, imidazole, oxazole, thiazole, quinoline and carbazole radicals.

2. The composition of claim 1 wherein A is the pyridine ring.

4,309,295

GRAIN BOUNDARY BARRIER LAYER CERAMIC DIELECTRICS AND THE METHOD OF MANUFACTURING CAPACITORS THEREFROM

Robert T. McSweeney, Valencia, Calif., assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 8, 1980, Ser. No. 120,113

Int. Cl.³ H01B *1/08;* **C04B** *35/46, 35/50;* **H01L** *21/38*

U.S. Cl. 252—62.3 BT **13 Claims**

1. A grain boundary barrier layer ceramic composition consisting essentially of a major amount of sintered strontium titanate and having the formula:

$$(1-x)SrTiO_3+x(1-y)((1-z)LnAlO_3+zLn_{0.66}Ti-O_3)+xyLnMO_3;$$

where Ln is selected from the group consisting of Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu; where M is selected from the group consisting of V, Cr, Mn, Fe, Co, Ni, Cu, Nb, Mo, Ta and W; and, where $x=0.02$ to 0.06, $y=0$ to 0.50 and $z=0$ to 1.00; and,

having diffused therein a barrier layer material consisting essentially of Bi_2O_3 or a mixture of a major amount of Bi_2O_3 with the balance comprising CdO or PbO.

4,309,296

REFRIGERANT MIXTURE

Naonori Enjo, Suita, and Hideki Aomi, Osaka, both of Japan, assignors to Daikin Kogyo Kabushiki Kaisha, Japan

Filed Nov. 13, 1979, Ser. No. 93,110

Claims priority, application Japan, Nov. 22, 1978, 53-144522

Int. Cl.³ C09K *5/04*

U.S. Cl. 252—67 **2 Claims**

1. A refrigerant consisting essentially of a mixture of chlorodifluoromethane and difluoromethane, the proportion of difluoromethane being 5 to 25% by weight based on the amount of the refrigerant.

4,309,297

HEAT STORAGE MATERIAL

Atsushi Sato, Tokyo; Yoshikazu Murai, Yokohama, and Nobuaki Mita, Tokyo, all of Japan, assignors to Nippon Petrochemicals Company, Ltd., Tokyo, Japan

Filed Nov. 28, 1980, Ser. No. 211,249

Claims priority, application Japan, Nov. 30, 1979, 54-155080

Int. Cl.³ C09K *5/06*

U.S. Cl. 252—70 **3 Claims**

1. A heat storage material which consists essentially of a mixture of dimethyl terephthalate and one member selected from the group consisting of dimethyl fumarate and dihydroanthracene, said mixture including dimethyl terephthalate in an amount of 3 to 35% by weight when in combination with dimethyl fumarate, and 20 to 40% by weight when in combination with dihydroanthracene, the balance of said mixture being the corresponding mixture member.

4,309,298

OXIDATIVE DESIZING AGENT AND PROCESS FOR OXIDATIVE DESIZING

Klaus Adrian, Frankfurt am Main, and Günter Rösch, Bad Soden am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 28, 1980, Ser. No. 135,160

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1979, 2913177

Int. Cl.³ C11D *3/395, 7/54*

U.S. Cl. 252—95 **3 Claims**

1. Oxidative desizing agent consisting essentially of, for use in an impregnation bath, a mixture of from 10 to 80% by weight of a surfactant selected from the group consisting of alkane sulfonates with from 8 to 20 carbon atoms, C_8–C_{20}-alkyl benzene sulfonates, C_8–C_{20}-olefinsulfonates, C_{10}–C_{18}-fatty alcohol sulfonates, polyethylene glycols with from 6 to 20 ethylene oxide units, C_{10}–C_{18}-fatty alcohol oxethylates with from 6 to 24 ethylene oxide units, C_4–C_{12}-alkylphenol oxethylates with from 6 to 20 ethylene oxide units and from 20 to 90% by weight of potassium persulfate, said mixture being prepared before use in said bath.

4,309,299

DETERGENT COMPOSITION HAVING IMPROVED CHLORINE RETENTION CHARACTERISTIC AND METHOD OF MAKING SAME

Anthony A. Rapisarda, Elmhurst, N.Y., and Joseph Romeo, Bergenfield, N.J., assignors to Lever Brothers Company, New York, N.Y.

Filed Sep. 4, 1980, Ser. No. 184,576

Int. Cl.³ C11D *7/54*

U.S. Cl. 252—95 **27 Claims**

1. A method of improving chlorine retention of a particulate detergent composition including a chlorine-releasing bleaching agent and one or more other components which, if the chlorine releasing bleaching agent is exposed thereto, will tend to cause premature chlorine release, which consists essentially of compacting and then forming granules of said other component in the substantial absence of said chlorine-releasing bleaching agent and then mixing said granules with said chlorine-releasing bleaching agent.

4,309,300

CLEANING SOLVENT AND METHOD OF CLEANING A METAL SURFACE

Mervin A. Danforth, Anaheim; Julian Giles, Huntington Park, and Saburo Nakahara, Garden Grove, all of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed May 4, 1979, Ser. No. 36,059

Int. Cl.³ C09D *9/00*; C11D *7/22*

U.S. Cl. 252—170 **10 Claims**

4. A composition for removing an ultraviolet light altered polymeric coating or for cleaning a metal surface for removal particularly of organic contaminants, which consists essentially of 15–50% of a glycol ether, 5–15% of an alcohol, 3–11% of a ketone and 24–77% deionized water, by volume, said glycol ether being a monoalkyl ether of a glycol selected from the group consisting of ethylene glycol, diethylene glycol and dipropylene glycol, said monoalkyl group containing 1 to 6 carbon atoms, said alcohol being an aliphatic alcohol containing from 1 to 6 carbon atoms, said ketone being selected from the group consisting of an aliphatic ketone of from 3 to 8 carbon atoms and cycloaliphatic ketones of 5 to 6 carbon atoms.

4,309,301

METHYLCHLOROFORM STABILIZER COMPOSITION EMPLOYING AN ALKYNYL SULFIDE

Nobuyuki Ishibe, Lake Jackson, Tex., and Thomas G. Metcalf, Albuquerque, N. Mex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 31, 1980, Ser. No. 221,945

Int. Cl.³ C23G *5/02*

U.S. Cl. 252—172 **9 Claims**

1. A stabilized methylchloroform composition consisting essentially of methylchloroform and an alkyl 2-propynyl sulfide, wherein the alkyl group contains from 1–3 carbon atoms and the alkyl 2-propynyl sulfide is present in a concentration of from about 2 to about 8 volume percent.

4,309,302

RUBBER ADDITIVES

Vincent P. Kuceski, Chicago Heights, Ill., and Lenoir Black, Memphis, Tenn., assignors to The C. P. Hall Company, Chicago, Ill.

Continuation of Ser. No. 658,424, Feb. 17, 1976, Pat. No. 4,173,552, which is a continuation of Ser. No. 496,611, Aug. 12, 1974, abandoned. This application Nov. 6, 1979, Ser. No. 91,852

Int. Cl.³ C09K *3/00*

U.S. Cl. 252—182 **3 Claims**

1. An additive for natural and synthetic olefinic rubbers which is a stearic acid substitute and contains a mixture of (1) a substantial amount of an aliphatic alcohol which contains 12 to 28 carbon atoms, and (2) a substantial amount of an aliphatic dicarboxylic acid which contains 4 to 54 carbon atoms, which additive is not volatile at 200° F. and has an acid number of at least 50.

4,309,303

ALKYL NITRITE COMPOSITIONS

Walter F. Boyce, 58 Bayberry La., Westport, Conn. 06880

Filed Feb. 6, 1980, Ser. No. 119,169

Int. Cl.³ C01B *21/50*; C07C *77/00*; C09K *15/06*

U.S. Cl. 252—186 **5 Claims**

1. A method of stabilizing liquid alkyl nitrites selected from the group consisting of isobutyl nitrite and isoamyl nitrite which comprises adding to the nitrites about 20 to 30 percent by weight of ethyl hydroxyethyl cellulose, calcium silicate or mixtures thereof and mixing to produce a solid state composition.

4,309,304

LIQUID CRYSTAL COMPOSITIONS FOR MULTIPLEXED DISPLAYS

Kenneth J. Harrison, Malvern Link, England, and Leo T. Carlino, Los Gatos, Calif., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

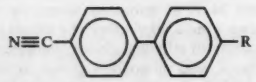
Continuation-in-part of Ser. No. 90,103, Nov. 1, 1979, abandoned. This application Sep. 29, 1980, Ser. No. 191,775

Int. Cl.³ C09K *3/34*; G02F *1/13*

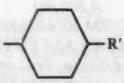
U.S. Cl. 252—299.63 **8 Claims**

1. A liquid crystal composition for multiplexed twisted neumatic display which exists in a nematic mesophase from at least about −20° to 50° C., comprising:

(a) From three to five cyanobiphenyl compounds represented by the formula:

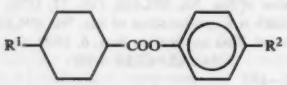


wherein R is selected from the group consisting of straight chain alkyl groups having two to ten carbon atoms, the propoxy radical ranging from about 5 to 12% by weight of the total composition, and the substituent



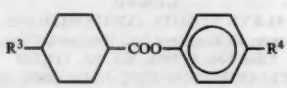
ranging from about 5 to 12% by weight of the total composition wherein R′ is selected from the group consisting of straight chain alkyl groups having three to five carbon atoms, and wherein the saturated ring has a trans conformation, at least one of said compounds having R as an alkyl group with two to five carbon atoms and wherein the sum of compounds having R as an alkyl group with two to four carbon atoms ranges from about 3 to 10% by weight of the total composition and at least one of said compounds having R as an alkyl group with seven to ten carbon atoms and wherein the sum thereof ranges from about 20 to 50% by weight of the total composition;

(b) at least one cyclohexane carboxylate ester compound represented by the formula:



wherein R^1 is selected from the group consisting of straight chain alkyl groups having two to three carbon atoms, wherein R^2 is selected from the group consisting of straight chain alkoxy groups having three to six carbon atoms, and wherein the saturated ring has a trans conformation; and

(c) at least one para-substituted phenyl benzoate ester represented by the formula:



wherein R^3 is selected from the group consisting of straight chain alkyl groups having three to seven carbon atoms, and wherein R^4 is selected from the group consisting of straight chain alkyl groups having five to nine carbon atoms,

subject to the proviso that the cyanobiphenyls range from about 67% to about 78% by weight of the composition, the cyclohexane carboxylate esters range from about 14% to about 21% by weight of the composition, and the phenyl benzoate esters range from about 8% to about 12% by weight of the composition, and subject to the further proviso that the cyanobiphenyl compounds include an embodiment having the above described saturated ring which constitutes from about 5% to about 12% by weight of the entire composition.

4,309,305

IN VITRO REMOVAL OF ACTINIDE (IV) IONS

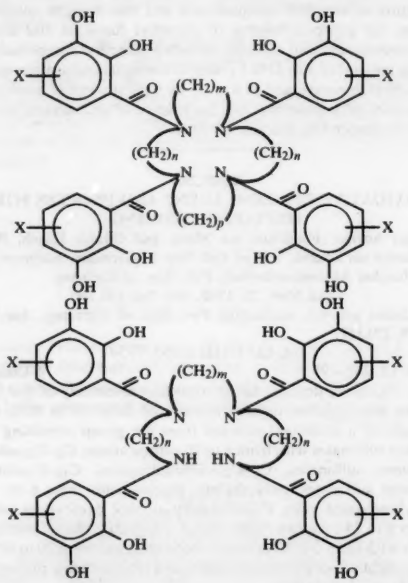
Frederick L. Weitl, Martinez, and Kenneth N. Raymond, Berkeley, both of Calif., assignors to The United States as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 927,234, Jul. 24, 1979, Pat. No. 4,181,684. This application Aug. 7, 1979, Ser. No. 64,596

Int. Cl.³ G21F *9/04*

U.S. Cl. 252—631 **6 Claims**

1. A method for sequestering an actinide (IV) ion in vitro which comprises treating the actinide (IV) ion with a compound of the formula:



wherein X is hydrogen, $-SO_3H$ or a salt thereof, or $-NO_2$; n is 2, 3, or 4; m is 2, 3, or 4; and p is 2 or 3.

4,309,306

MICELLAR SOLUTIONS OF THIN FILM SPREADING AGENTS COMPRISING RESINOUS POLYALKYLENE OXIDE ADDUCTS

Charles M. Blair, Jr., Buena Park, Calif., assignor to Magna Corporation, Santa Fe Springs, Calif.

Filed Oct. 5, 1979, Ser. No. 82,253

Int. Cl.³ B01D *17/04*; E21B *43/24, 43/22*

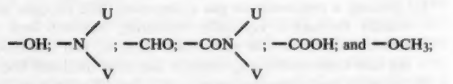
U.S. Cl. 252—358 **46 Claims**

1. A homogeneous micellar thin film spreading agent solution comprising: (1) from between about 5% and about 75% by weight of a resinous polyalkylene oxide adduct of a fusible, water-insoluble organic aromatic hydrocarbon solvent-soluble synthetic resin, wherein said resin has from between about 4 to about 15 phenolic groups and is an alkyl or cycloaliphatic

substituted phenol-aldehyde condensate of an ortho- or para-substituted phenol and an aldehyde, said condensate resin being thereafter further condensed with an alkylene oxide containing less than about five carbon atoms in an amount equal to at least one mole of alkylene oxide per phenolic moiety of said resin, said adduct at about 25° C.: (A) having a solubility in water and isooctane of less than about 1%, by volume; (B) having a solubility parameter from between about 6.8 and about 8.5; and (C) spreading at the interface between white, refined mineral oil and distilled water to form a film having a calculated thickness no greater than about 20 Angstroms, at a spreading pressure of about 16 dynes per cm; (2) from between about 2% and about 30% by weight of a hydrotropic agent having one of the formulas:

$$X-Z \qquad (A)$$

wherein X is an alkyl, alicyclic, aromatic, alkylalicyclic, alkylaryl, arylalkyl, alicyclicalkyl, heterocyclic or substituted heterocyclic radical having 2 to 13 carbon atoms; and wherein Z is one of:

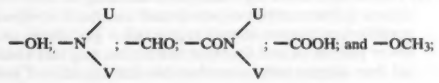


wherein U and V are hydrogen or hydrocarbon substituents,

$$X\text{-}Y\text{-}R\text{-}(Z)_n \qquad (B)$$

wherein:

Z is one of



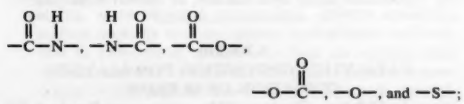
X is an alkyl, alicyclic, aromatic, alkylalicyclic, alkylaryl, arylalkyl, alicyclicalkyl, heterocyclic or substituted heterocyclic radical having 2 to 12 carbon atoms;

U and V are hydrogen or hydrocarbon substituents;

R is a member selected from the class consisting of, $-CH_2-$, $-C_2H_4-$, $C_3H_5=$, $-C_3H_6$, and $-C_2H_4-O-C_2H_4-$;

n is either a one or two integer, the integer dependent upon the selection of R; and

Y is a member selected from the class consisting of:



(3) from between about 2% and about 30% by weight of an amphipathic agent having at least one radical having from between about 10 and about 64 carbon atoms per molecule; and

(4) from between about 15% and about 90% by weight, water.

4,309,307

GAS MIXTURES FOR GAS-FILLED RADIATION DETECTORS

Loucas G. Christophorou, Oak Ridge; Dennis L. McCorkle, Knoxville; David V. Maxey, Knoxville, and James G. Carter, Knoxville, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 5,263, Jan. 22, 1979, Pat. No. 4,201,692. This application Mar. 28, 1980, Ser. No. 134,815

The portion of the term of this patent subsequent to May 6, 1997, has been disclaimed.

Int. Cl.[3] **C09K** *3/00;* **H01J** *39/28, 39/30*

U.S. Cl. 252—372 **1 Claim**

1. A gas mixture for use in a gas-filled radiation detector, comprising CF_4, C_2H_2 and a gas selected from the group consisting of argon, krypton and xenon, with the concentration of said CF_4 in said mixture being in the range of about 3 to about 10 volume percent and the concentration of said C_2H_2 in said mixture being in the range of about 10 to about 15 volume percent.

4,309,308

FLUID CATALYST REGENERATION PROCESS AND APPARATUS

Anthony G. Vickers, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 969,607, Dec. 14, 1978, Pat. No. 4,219,442. This application Feb. 4, 1980, Ser. No. 118,372

The portion of the term of this patent subsequent to Aug. 26, 1997, has been disclaimed.

Int. Cl.[3] **B01J** *21/20, 29/38;* **C10G** *11/18;* **F27B** *15/08*

U.S. Cl. 252—417 **4 Claims**

1. In a process for regenerating a coke-contaminated fluid catalyst to obtain a regenerated catalyst of a pre-determined temperature range with return of said regenerated catalyst to a hydrocarbon conversion zone which process comprises:

(a) introducing oxygen containing regeneration gas and coke-contaminated fluid catalyst into a lower locus of a relatively dilute phase combustion zone maintained at a temperature sufficient for coke oxidation and therein oxidizing coke to produce hot regenerated catalyst and hot flue gas;

(b) collecting and withdrawing from an upper locus of said relatively dilute phase combustion zone a portion of said hot regenerated catalyst;

(c) transporting said hot flue gas and the remaining portion of said hot regenerated catalyst into a lower locus of a relatively dense phase heat removal zone and therein maintaining said catalyst at relatively dense phase fluid bed conditions;

(d) withdrawing heat by a heat removal means from said hot regenerated catalyst in said relatively dense phase heat removal zone; and

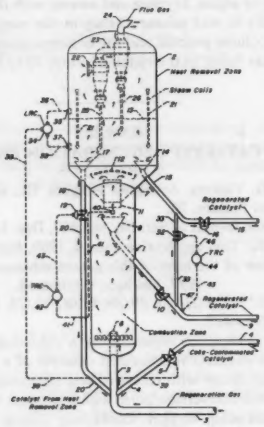
(e) recovering regenerated catalyst possessing the predetermined temperature range for its return to said hydrocarbon conversion zone by (1) either withdrawing the required regenerated catalyst exclusively from said upper locus of said relatively dilute phase combustion zone when the desired temperature of said regenerated catalyst is the upper limit of said pre-determined range; or (2) withdrawing a portion of the required regenerated catalyst from said relatively dense phase heat removal zone, withdrawing a portion from said upper locus of said relatively dilute phase combustion zone and thereafter admixing said withdrawn portions, wherein said withdrawing is controlled by sensing the temperature of said admixture of regenerated catalyst and controllably withdrawing said regenerated catalyst from said relatively dense phase heat removal zone responsive to said temperature, thereby admixing said withdrawn portions in suitable proportions for maintaining said temperature within said pre-determined temperature range.

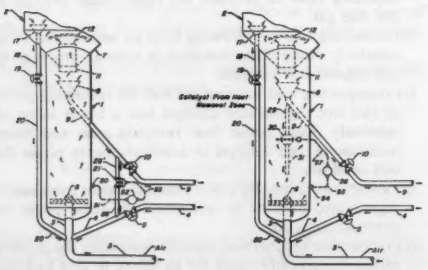
3. In a process for regenerating a coke-contaminated fluid catalyst to obtain a regenerated catalyst of a pre-determined temperature range for return of said regenerated catalyst to a hydrocarbon conversion zone which process comprises:

(a) introducing oxygen containing gas and coke-contaminated fluid catalyst into a lower locus of a relatively dilute phase combustion zone maintained at a temperature sufficient for coke oxidation and therein oxidizing coke to produce said hot regenerated catalyst and hot flue gas;

(b) collecting and withdrawing from an upper locus of said relatively dilute phase combustion zone a portion of said hot regenerated catalyst;

(c) transporting said hot flue gas and the remaining portion





of said hot regenerated catalyst into a lower locus of a relatively dense phase heat removal zone and therein maintaining said catalyst at relatively dense phase fluid bed conditions; and

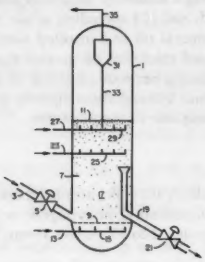
(d) withdrawing heat by a heat removal means from said hot regenerated catalyst maintained in said relatively dense phase heat removal zone; wherein said withdrawing of catalyst and said temperature at said upper locus of said relatively dilute phase combustion zone is controlled by sensing said temperature at said upper locus, controllably withdrawing said regenerated catalyst from said relatively dense phase and introducing said withdrawn portion into said lower locus of said relatively dilute phase combustion zone responsive to said temperature.

4,309,309

ADDING FUEL IN CATALYST REGENERATION

William A. Blanton, Jr., Woodacre, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jun. 27, 1980, Ser. No. 163,536
Int. Cl.[3] B01J *21/20, 29/38;* C10G *11/18*
U.S. Cl. 252—417 5 Claims



1. A method for removing nitrogen-containing coke from coke-containing particulate catalyst which comprises:

(a) passing a regeneration gas comprising free oxygen upwardly through a vertically extending fluidized bed of substantially coke-free particulate catalyst, and introducing said coke-containing catalyst into said fluidized bed;

(b) burning said nitrogen-containing coke off coke-containing catalyst present in a lower portion of said fluidized bed and burning substantially all carbon monoxide generated in said lower portion of said bed in the presence of a combustion-promoting metal, sufficient free oxygen being introduced into said bed in said regeneration gas to provide at least 1 volume percent residual-free oxygen in said regeneration gas in said lower portion of said bed, whereby coke is removed from said coke-containing catalyst and nitrogen oxide are formed in said lower portion of said bed;

(c) generating a reducing atmosphere including at least 0.05 volume percent carbon monoxide and less than 0.5 volume percent free oxygen in said regeneration gas above said lower portion of said fluidized bed by reacting said residual free oxygen with a combustible fuel introduced into said regeneration gas above said lower portion of said bed, thereby decreasing the amount of nitrogen oxides in said regeneration gas by reacting at least a portion of said nitrogen oxides in said reducing atmosphere to form free nitrogen;

(d) and burning the carbon monoxide present in said regeneration gas above the lower portion of said bed with additional free oxygen while in contact with said bed above said reducing zone.

2. A method according to claim 1 wherein said combustion-promoting metal is selected from platinum, palladium, iridium, osmium, rhodium, ruthenium, copper, chromium and manganese.

5. A method according to claim 1 wherein said combustible fuel is selected from at least one gaseous hydrocarbon, at least one vaporizable liquid hydrocarbon, or carbon monoxide.

4,309,310

CATALYTIC COMPOSITION FOR ALLYLIC OXIDATION OF OLEFINS

James L. Callahan, Wooster, Ohio, assignor to Standard Oil Company, Cleveland, Ohio

Filed Mar. 31, 1980, Ser. No. 135,570
Int. Cl.[3] B01J *31/12*
U.S. Cl. 252—431 P 6 Claims

1. A catalytic composition of the empirical formula

$$M_a(RF_bX)_cM'_dO_e \quad (I)$$

where
M is at least one of Mo and V,
R is an alkyl radical of 1-6 carbon atoms,
X is $PO_3^=$ or SO_3^-,
M' is at least one of Sb, Cu and Pd,
a is a number of about 0.5 to 8,
b is a number sufficient to satisfy all but one of the valence requirements of R,
c is a number of about 1 to 5,
d is a number of about 0 to 10, and
e is a number sufficient to satisfy the remaining valence requirements of the other elements present.

4,309,311

AMMONIA SYNTHESIS WITH CATALYST DERIVED BY HEATING ON A SUPPORT A SALT SELECTED FROM ALKALI METAL, ALKALINE EARTH METAL, IRON AND COBALT HEXACYANOCOBALTATES AND HEXACYANORUTHENATES

Marvin M. Johnson; Donald C. Tabler, and Gerhard P. Nowack, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 8, 1980, Ser. No. 110,303
Int. Cl.³ B01J 27/24; C01C 1/04, 3/11, 3/12
U.S. Cl. 252—438 6 Claims

1. A composition which can be heated at a temperature within the approximate range 325°–430° C. to activate the same to render it effective for ammonia synthesis at a relatively low temperature in the range 385°–460° C. which comprises on a suitable support at least one salt selected from the group consisting of an alkali metal hexacyanocobaltate, an alkaline earth metal hexacyanocobaltate, an alkali metal hexacyanoruthenate, an alkaline earth metal hexacyanoruthenate, iron hexacyanocobaltate, iron hexacyanoruthenate, cobalt hexacyanocobaltate and cobalt hexacyanoruthenate.

6. As a new compound a salt selected from the group consisting of the following:

$Ca_3[Co(CN)_6]_2$	Calcium hexacyanocobaltate(III)
$Na_4[Ru(CN)_6]$	Sodium hexacyanoruthenate(II)
$Rb_4[Ru(CN)_6]$	Rubidium hexacyanoruthenate(II)
$Cs_4[Ru(CN)_6]$	Cesium hexacyanoruthenate(II)
$Mg_2[Ru(CN)_6]$	Magnesium hexacyanoruthenate(II)
$Ca_2[Ru(CN)_6]$	Calcium hexacyanoruthenate(II)
$Ba_2[Ru(CN)_6]$	Barium hexacyanoruthenate(II)
$Fe_2[Ru(CN)_6]$	Iron hexacyanoruthenate(II)
$Co_2[Ru(CN)_6]$	Cobalt hexacyanoruthenate(II).

4,309,312

MANUFACTURE OF SPHERICAL ALUMINA FROM GIBBSITE

Shizuo Takumi, Kamakura; Toshio Hashimoto, and Masaru Tatsushima, both of Isehara, all of Japan, assignors to Nikki-Universal Co., Ltd., Tokyo, Japan

Filed Oct. 18, 1979, Ser. No. 86,193
Claims priority, application Japan, Oct. 26, 1978, 53-131779
Int. Cl.³ B01J 37/00, 35/08, 21/04; C01F 7/02
U.S. Cl. 252—448 5 Claims

1. A method of manufacturing spherical alumina particles comprising the steps of:
reacting, at an elevated temperature, gibbsite containing sodium impurity with an aqueous hydrochloric acid solution in proportions effective to form an aqueous basic aluminum chloride solution having an aluminum concentration in the range of from 7 wt. % to 12 wt. %, a weight ratio of aluminum to chloride in the range of from 0.3 to 0.8 and containing said sodium impurity;
then reacting, at an elevated temperature, said aqueous basic aluminum chloride solution with metallic aluminum in proportions effective to form an alumina hydrosol having an aluminum concentration in the range of from 9 wt. % to 15 wt. % and a weight ratio of aluminum to chloride in the range of from 0.8 to 1.5 and containing said sodium impurity;
then commingling said alumina hydrosol with a gelling agent which hydrolyzes at an elevated temperature and then dispersing droplets of said mixture in a suspending medium under conditions effective to transform said droplets into hydrogel particles;
ageing said hydrogel particles first in said suspending medium and then in aqueous ammonia;
then washing said hydrogel particles with water to remove said sodium impurity;
then drying and then calcining said hydrogel particles to obtain spherical alumina particles.

2. A method according to claim 1 wherein the reaction between gibbsite and aqueous hydrochloric acid solution is performed at a temperature in the range of from 100° C. to 200° C.

3. A method according to claim 1 wherein the reaction between basic aluminum chloride solution and metallic aluminum is performed at a temperature in the range of from 50° C. to 150° C.

4,309,313

SYNTHESIS OF CESIUM-CONTAINING ZEOLITE, CSZ-1

Michael G. Barrett, Laurel, Md., and David E. W. Vaughan, Flemington, N.J., assignors to W. R. Grace & Co., New York, N.Y.

Filed May 23, 1980, Ser. No. 152,642
Int. Cl.³ B01J 29/08, 29/28; C01B 33/28
U.S. Cl. 252—455 Z 25 Claims

1. A synthetic crystalline aluminosilicate zeolite having a formula in terms of mole ratios of oxides as follows:

$$0.05\text{–}0.55\ M_2O{:}0.45 \text{ to } 0.95\ Na_2O{:}Al_2O_3{:}3\text{–}7\ SiO_2{:}x\ H_2O$$

where M is cesium or thallium and x is 0 to 10 and having an x-ray powder diffraction pattern substantially as set forth in Table I of the specification.

2. A composite catalyst consisting of a mixture of the synthetic crystalline aluminosilicate zeolite according to claim 1 and a rare earth exchanged Y zeolite.

4,309,314

CATALYTIC COMPOSITION FOR THE SELECTIVE FORMATION OF ETHANOL AND METHYL ACETATE FROM METHANOL AND SYNTHESIS GAS

Duane C. Hargis, Pleasant Ridge, and Michael Dubeck, Birmingham, both of Mich., assignors to Ethyl Corporation, Richmond, Va.

Filed May 27, 1980, Ser. No. 153,610
Int. Cl.³ B01J 21/04, 23/58, 23/89
U.S. Cl. 252—466 B 5 Claims

1. A catalyst composition for selectively converting methanol, carbon monoxide and hydrogen to ethanol and methyl acetate consisting essentially of rhodium and iron in the reduced state deposited on a support of alumina on which is deposited a minor amount of a metal selected from the group consisting of sodium and calcium.

4,309,315

SURFACE-ACTIVATED FUNCTIONAL MATERIALS AND A METHOD OF PRODUCING THE SAME

Masashi Nakamura, Yokosuka, Japan, assignor to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Dec. 21, 1979, Ser. No. 106,363
Claims priority, application Japan, Dec. 27, 1978, 53-160018
Int. Cl.³ B01J 23/38, 35/02
U.S. Cl. 252—472 32 Claims

1. A surface-activated functional material comprising a substrate of a metal exhibiting catalytic properties when activated, the atomic configuration of which is activated by excitation,

and a second metal element adsorbed to the surface of said metal substrate so as to preserve the activated state of said metal substrate; the surface of said metal substrate consisting of an outermost layer composed only of atoms of said metal substrate, said outermost layer having lattice holes, and a second layer beneath said outermost layer composed of atoms of said metal substrate and atoms of said second metal element adsorbed in lattice holes defined by surface migration of atoms of said metal substrate during the excitation such that less than one monolayer of said second metal is adsorbed to the surface of said substrate.

4,309,316

PROCESS FOR THE PRODUCTION OF WASHING POWDERS OF STABILIZED OR ENHANCED APPEARANCE WHICH CONTAIN FLUORESCENT WHITENING AGENTS

Burkhart Lange, Basel; Suresh C. Agarwal, Bottmingen; Werner Fringeli, Laufen, and Franz Günter, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

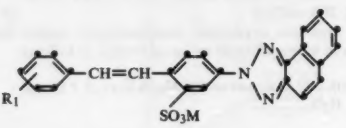
Filed Dec. 10, 1979, Ser. No. 102,057

Claims priority, application Switzerland, Dec. 22, 1978, 13106/78; Sep. 12, 1979, 8252/79

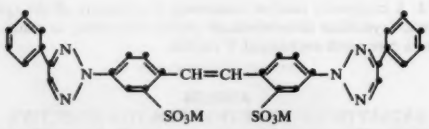
Int. Cl.³ C09K *11/02, 11/06;* **C11D** *3/42, 11/00*

U.S. Cl. 252—543 **16 Claims**

1. A process for the production of a washing powder of stabilized or enhanced appearance which contains one or more fluorescent whitening agents of the formula



or of the formula



wherein R_1 is hydrogen or chlorine, and M is hydrogen, an alkali metal, ammonium or amine salt ion, which process comprises first dissolving or dispersing the fluorescent whitening agent or agents in a mixture of water and a polyvinyl alcohol or polyvinyl pyrrolidone polymer which is soluble or swellable in water, wherein the ratio of fluorescent whitening agent or agents to polymer in the aqueous solution or dispersion, or in the dry powder obtained therefrom, is 9:1 to 1:10, and adding the solution or dispersion so obtained, which may additionally contain a polyethylene glycol, a surfactant containing ethyleneoxy and/or propyleneoxy groups, or a cellulose ether, to the washing powder slurry and subsequently drying this slurry, or, optionally after the addition of further washing powder components, spraying said solution or dispersion onto a dried unfinished washing powder.

4,309,317

CLEAR AQUEOUS OLEFIN SULFONATE SOLUTION

Shizuo Sekiguchi, Funabashi; Tetsuo Tano, and Kyozo Kitano, both of Chiba, all of Japan, assignors to Lion Corporation, Tokyo, Japan

Filed Feb. 6, 1980, Ser. No. 119,020

Claims priority, application Japan, Feb. 20, 1979, 54-18719

Int. Cl.³ C11D *1/14*

U.S. Cl. 252—555 **8 Claims**

1. A clear aqueous olefin sulfonate solution comprising 20 through 45% by weight of at least one α-olefin sulfonate having 12 through 20 carbon atoms;

0.1 through 5 parts by weight, based on 100 parts by weight of the α-olefin sulfonate, of a component A selected from the group consisting of hydroxyethylenediamine triacetates, ethylenediamine tetraacetates, citrates, malates, benzoates, salicylates and sulfosalicylates; and

1 through 10 parts by weight, based on 100 parts by weight of the α-olefin sulfonate, of a component B selected from the group consisting of monocarboxylates having 1 through 3 carbon atoms and gluconates;

said α-olefin sulfonate, and components A and B each being present in the form of a salt of lithium, sodium, potassium or magnesium or of any mixture thereof.

4,309,318

TREAD COMPOSITIONS FOR TIRES HAVING LOW ROLLING RESISTANCE

Asahiro Ahagon; Makoto Misawa, both of Hiratsuka; Hiroshi Hirakawa, Isehara, and Kazuo Miyasaka, Hiratsuka, all of Japan, assignors to Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Nov. 16, 1979, Ser. No. 95,047

Claims priority, application Japan, Dec. 28, 1978, 53-161158

Int. Cl.³ C08L *7/00, 47/00;* **C08K** *3/04*

U.S. Cl. 260—5 **5 Claims**

1. A tread composition for tires having low rolling resistance consisting essentially of, by weight, (A) 100 parts of a member selected from the group consisting of styrene-butadiene rubber alone and a mixture containing at least 50% of styrene-butadiene rubber and less than 50% of at least one member selected from the group consisting of natural rubber and synthetic diene rubbers, (B) 3.2–5.0 parts of sulphur and (C) at least 40 parts of carbon black.

4,309,319

SILICONE RESIN COATING COMPOSITION

Howard A. Vaughn, Jr., Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Continuation-in-part of Ser. No. 964,910, Nov. 30, 1978. This application Oct. 5, 1979, Ser. No. 82,163

Int. Cl.³ C08L *1/28, 5/00, 83/00*

U.S. Cl. 260—9 **16 Claims**

1. An aqueous coating composition comprising a dispersion of colloidal silica having a particle size of from 5 to 150 millimicrons in diameter in a loweraliphatic alcohol-water solution of the partial condensate of a silanol of the formula $RSi(OH)_3$, wherein the lower-aliphatic alcohol-water solvent contains from about 20 to 75 weight percent of said lower-aliphatic alcohol component and wherein R is selected from the group consisting of alkyl having from 1 to 3 carbon atoms and aryl, at least 70 weight percent of the silanol being $CH_3Si(OH)_3$, said composition containing 10 to 50 weight percent solids consisting essentially of 10 to 70 weight percent colloidal silica and 30 to 90 weight percent of the partial condensate, the composition further containing from about 0.1 to about 1 percent by weight of a thickening agent selected from the group consisting of hydroxypropyl guar gum and hydroxypropyl cellulose, said composition having a pH of 7.1 to about 7.8.

4,309,320

PIGMENT FLUSHING

Manohar L. Arora, Zeeland, and Thomas E. Foye, Jenison, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 3, 1979, Ser. No. 109,414

Int. Cl.³ C09C *3/10;* **C09D** *17/00*

U.S. Cl. 260—23 R **15 Claims**

1. In the method for transferring an organic pigment from an aqueous pulp of the pigment to a water-immiscible hydrophobic organic vehicle by mixing said aqueous pulp and said vehi-

cle until a major portion of the water present in said pulp separates, the improvement to achieve low initial viscosity, good shelf stability, and good tint strength comprising incorporating, in an amount effective to achieve said results, at least one additive selected from the class consisting of sulfonated sperm oil, sulfated sperm oil, and mixtures thereof with said vehicle and said pigment.

11. A composition characterized by low initial viscosity, good shelf stability, and good tint strength consisting essentially of an organic pigment, a water-immiscible hydrophobic organic vehicle, and at least one additive selected from the class consisting of sulfonated sperm oil, sulfated sperm oil, and mixtures thereof in an amount effective to achieve said low initial viscosity, good shelf stability, and good tear strength.

4,309,321

AQUEOUS COATING COMPOSITION

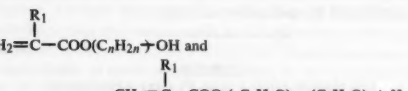
Tetsuo Aihara; Yasuharu Nakayama, and Yoshio Yamashita, all of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Japan

Filed Aug. 12, 1980, Ser. No. 117,511
Claims priority, application Japan, Aug. 17, 1979, 54-103981
Int. Cl.³ C08L *33/02*
U.S. Cl. 260—23 CP **27 Claims**

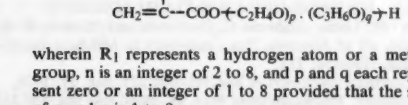
1. An aqueous coating composition comprising as film-forming components:

I. a water-soluble or water-dispersible product of a resin (i) obtained by copolymerizing:

(A) a fatty acid-modified acrylic monomer composed of the reaction product between an unsaturated fatty acid having at least two non-conjugated double bonds and a hydroxyl-containing ester of acrylic or methacrylic acid selected from the group consisting of compounds of the following formulae:



(a)



(b)

wherein R_1 represents a hydrogen atom or a methyl group, n is an integer of 2 to 8, and p and q each represent zero or an integer of 1 to 8 provided that the sum of p and q is 1 to 8,

(B) an α,β-ethylenically unsaturated carboxylic acid, and

(C) an unsaturated monomer having a Q value in the Q-e theory of at least 0.1, and

II. a vinyl polymer emulsion obtained by polymerizing an unsaturated vinyl monomer selected from the group consisting of vinyl aromatic compounds, acrylic esters, methacrylic esters, diolefin compounds, vinyl acetate and Veova monomer, in the presence of a water-soluble oxidation-curable resin (ii) as a dispersion stabilizer, which is selected from the group consisting of maleinized polydienes, maleinized fatty acid-modified alkyd resins, maleinized fatty acid-modified epoxy resins, fatty acid-modified acrylic resins, maleinized fatty acid-modified acrylic resins, maleinized oils, maleinized stand oils, maleinized boil oils, maleinized fatty acid-modified vinyl resins, water-soluble alkyd resins and fatty acid-modified water-soluble epoxy resins.

4,309,322

PAINT STRIPPER

Leon O. Desmarais, Old Hickory, Tenn., assignor to Sterling Drug Inc., New York, N.Y.

Filed Jun. 18, 1980, Ser. No. 160,487
Int. Cl.³ C08L *91/00*
U.S. Cl. 260—28.5 R **16 Claims**

1. A non-flammable thixotropic stripper for paint and varnish comprising, in percent by weight, 66–72% of methylene chloride, 3–6% of ethylene glycol monoethyl ether, 8–12% of petroleum naphtha, 8–12% of methanol, 1–3% of an evaporation retardent, 0.2–1% of a thickener, 1–3% of polyoxyethylene glycol (5) tallow oil amine and the remainder water.

3. A non-flammable stripper for paint and varnish as claimed in claim **1**, wherein said thickener is cross-linked polyacrylic acid.

4,309,323

MELT DYEING OF POLYETHYLENE WITH INDIGO

Malcolm K. Orloff, Basking Ridge, N.J., and LeRoy A. White, Somers, Conn., assignors to Buffalo Color Corporation, West Paterson, N.J.

Filed Oct. 8, 1980, Ser. No. 195,235
Int. Cl.³ C08L *91/06*
U.S. Cl. 260—28.5 A **14 Claims**

1. A composition comprising polyethylene having from about 0.002 to about 1 weight percent of indigo dye uniformly melt dispersed therein, the average particle size of said dispersed indigo being less than about 1 micron.

4,309,324

SOLIDIFICATION OF LIQUIDS WITH POLYHEXAMETHYLENIMINE

Hitoshi Yuasa, and Hirosuke Imai, both of Yokohama, Japan, assignors to Nippon Oil Company, Ltd., Tokyo, Japan

Division of Ser. No. 946,528, Sep. 26, 1978, Pat. No. 4,216,307. This application Mar. 4, 1980, Ser. No. 127,063
Claims priority, application Japan, Sep. 29, 1977, 52-116149; Mar. 16, 1978, 53-29265; Jun. 7, 1978, 53-67617; Jun. 9, 1978, 53-68959
Int. Cl.³ C08L *79/00*
U.S. Cl. 260—29.2 N **6 Claims**

1. A method for solidifying liquid organic compounds, which comprises adding polyhexamethylenimine having a number average molecular weight of 500 to 20,000 and having a structural unit of the general formula $[(CH_2)_6NH]$ to a liquid organic compound in the presence of water, said liquid organic compound being selected from the group consisting of aliphatic hydrocarbons, aromatic hydrocarbons, alicyclic hydrocarbons, ester compounds and halogenated hydrocarbons.

4,309,325

CLAY-CEMENT MORTARS AND TO THE PRODUCT MADE WITH SAID MORTARS

Michel Laquerbe, and Francois Tatard, both of Rennes, France, assignors to Societe Metallurgique de Bretagne, France

Continuation-in-part of Ser. No. 813,965, Jul. 18, 1977, abandoned, and Ser. No. 58,922, Jul. 19, 1979. This application Oct. 23, 1979, Ser. No. 87,330
Claims priority, application France, Jul. 13, 1976, 76 21522; Jul. 21, 1978, 78 21747
Int. Cl.³ C08L *61/20, 61/28;* **C04B** *7/02, 31/30*
U.S. Cl. 260—29.4 R **17 Claims**

1. A mortar consisting of a cement, clay in a proportion by weight which is between 1.5 and 4 times that of the cement, gauging water, and an additive selected from the group consisting of urea-formaldehyde resins, melamine-formaldehyde resins and formamide, the dry weight of additive present being between 1 and 20% of the total weight of the clay and cement, and said clay having a pH which is basic.

4,309,326

GLASS SIZE COMPOSITIONS AND GLASS FIBERS COATED THEREWITH

Donald B. Sage, Granville, and Fred G. Krautz, Newark, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 895,883, Apr. 13, 1978, Pat. No. 4,178,412, which is a continuation-in-part of Ser. No. 752,222, Nov. 20, 1976, abandoned. This application Oct. 1, 1979, Ser. No. 80,637

Int. Cl.[3] B32B *9/00*; C08L *67/06*

U.S. Cl. 260—29.6 NR 9 Claims

1. An aqueous glass size composition comprising an unsaturated, water-emulsifiable polyester resin, an ethylene-vinyl acetate copolymer and a vinyl acetate-organosilane copolymer having from about 1 to about 7 weight percent of said organosilane.

4,309,327

POLYMERIC RESIN FROM ETHYLENIC AMINO, SULFONIC MONOMERS

Shinichi Ishikura, Takatsuki; Ryuzo Mizuguchi, Yahata; Keizou Ishii, Ashiya, and Tamotu Yoshioka, Hirakata, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

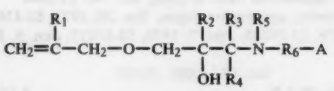
Filed Oct. 9, 1979, Ser. No. 82,585

Claims priority, application Japan, Mar. 1, 1979, 54-24356; Mar. 1, 1979, 54-24357

Int. Cl.[3] C08F *228/00*

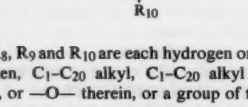
U.S. Cl. 260—29.6 H 10 Claims

1. In a pigment-containing coating composition, the improvement wherein the composition contains as a main component a polymeric resin obtained by solution polymerization of at least one polymerizable amino acid compound of the formula:



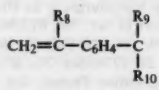
(Ia)

wherein R_1, R_2, R_3 and R_4 are each hydrogen, methyl or ethyl, R_5 is hydrogen, C_1–C_{20} alkyl or C_1–C_{20} alkyl having —SO—, —COO— or —O— therein, R_6 is (a) C_1–C_{12} alkylene, (b) C_1–C_{12} alkylene substituted by C_1–C_4 alkyl, —OH, —SH or —SR_7 wherein R_7 is C_1–C_4 alkyl, (c) phenylene or (d) phenylene substituted by C_1–C_4 alkyl and A is —SO_3H, or



(Ib)

wherein R_8, R_9 and R_{10} are each hydrogen or C_1–C_6 alkyl, R_{11} is hydrogen, C_1–C_{20} alkyl, C_1–C_{20} alkyl having —SO—, —COO—, or —O— therein, or a group of the formula:



wherein R_8, R_9 and R_{10} are as defined above, R_{12} is C_2–C_{12} alkylene, C_2–C_{12} alkylene substituted with C_1–C_6 alkyl, phenylene, or phenylene substituted with C_1–C_4 alkyl, and A is —SO_3H, alone or with at least one other polymerizable monomer having ethylenic unsaturation, with the proviso that when other polymerizable monomer is ued the amount of the polymerizable amino acid compound is from 0.1 to 50% by weight based on the total weight of the polymerizable monomeric compounds.

4,309,328

STABLE AQUEOUS DISPERSIONS OF PARTICLES OF VINYLIDENE FLUORIDE POLYMER

Dennis W. Carson, Lower Burrell; Ralph C. Gray, Allison Park, and Glenn W. Luckock, Natrona Heights, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 28, 1979, Ser. No. 98,158

Int. Cl.[3] C08L *27/16*

U.S. Cl. 260—29.6 F 28 Claims

1. A method for producing a stable aqueous dispersion of particles of vinylidene fluoride polymer comprising bringing into admixture:

(a) unstabilized particles of vinylidene fluoride polymer,

(b) dispersion vehicle which is an interpolymer of monoethylenically unsaturated monomers wherein said monomers comprise acrylic ester monomer and monoethylenically unsaturated acid and which is at least partially neutralized,

(c) liquid organic active solvent for said vinylidene fluoride polymer wherein said active solvent is miscible with water and wherein said active solvent would itself dissolve vinylidene fluoride polymer particles at some temperature below about 40° C.,

(d) liquid organic nonsolvent for said vinylidene fluoride polymer wherein said organic nonsolvent is miscible with water and with said active solvent, and

(e) water; wherein:

(f) said active solvent is brought into contact with said particles in the presence of said organic nonsolvent,

(g) said dispersion vehicle is at least partially neutralized before said dispersion vehicle is brought into contact with said water, and

(h) the amounts of said active solvent and said organic nonsolvent are such that such particles are wetted by said dispersion vehicle but said particles are not substantially solubilized by said active solvent.

4,309,329

AQUEOUS DRILLING FLUID ADDITIVE

James M. Lucas; Alphonse C. Perricone, and Dorothy P. Enright, all of Houston, Tex., assignors to Milchem Incorporated, Houston, Tex.

Continuation-in-part of Ser. No. 946,227, Sep. 27, 1978, abandoned. This application Mar. 18, 1980, Ser. No. 131,328

The portion of the term of this patent subsequent to May 19, 1998, has been disclaimed.

Int. Cl.[3] C08L *33/02*

U.S. Cl. 260—29.6 TA 8 Claims

1. An aqueous solution of a terpolymer filtration control agent for aqueous based drilling fluids having clayey material therein, said terpolymer consisting essentially of (1) from about 5 to about 62 mole percent of alkali metal acrylate units, (2) from about 2 to about 40 mole percent of hydroxyalkyl acrylate units selected from 2-hydroxyethyl acrylate, 2-hydroxypropyl acrylate and 2-hydroxybutyl acrylate units, and (3) from about 31 to about 91 mole percent of acrylamide units; a 0.2% by weight aqueous solution of said terpolymer having a viscosity at about 25° C. of from about 6 centipoises to about 85 centipoises, as determined at a shear rate of 511 reciprocal seconds.

4,309,330

COPOLYMER EMULSION

Ryoji Ukita, and Takao Hirayama, both of Hitachi, Japan, assignors to Hitachi Chemical Company Ltd., Tokyo, Japan

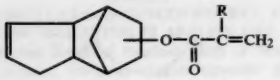
Filed Feb. 19, 1981, Ser. No. 236,225

Int. Cl.[3] C08F *265/04*

U.S. Cl. 260—29.7 H 9 Claims

1. A copolymer emulsion comprising (I) a copolymer obtained by copolymerizing

(A) a dicyclopentadiene derivative of the formula:



wherein R is hydrogen, halogen or a lower alkyl group, in an amount of 2 to 30 parts by weight,

(B) an α,β-unsaturated monomer having one or more hydroxyl groups in an amount of 3 to 20 parts by weight, and

(C) an α,β-unsaturated monomer copolymerizable with the components (A) and (B) in an amount sufficient for making the total amount of the components (A), (B) and (C) 100 parts by weight,

followed by the reaction of the resulting copolymer with

(D) a partial allyl ether of polyhydric alcohol having one or more terminal isocyanate groups obtained by reacting a partial allyl ether of polyhydric alcohol with a diisocyanate in an amount of 2 to 20 parts by weight, and (II) water.

4,309,331

SURFACTANT-FREE ACRYLIC PLASTISOLS AND ORGANOSOLS COMPOSITIONS

Boynton Graham, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 780,085, Mar. 22, 1977, abandoned. This application Oct. 18, 1978, Ser. No. 952,467

Int. Cl.³ C08F *20/14, 2/14;* **C08L** *33/12;* **C08F** *2/44*

U.S. Cl. 260—30.6 R **7 Claims**

1. Thermally coalescible acrylic resin plastisol or organosol dispersion comprising particles having a mean diameter in the range of 0.1 to 20 μm of a single-phase, surfactant-free, homopolymer, random bipolymer or consisting of ethyl acrylate, methyl acrylate and methacrylic acid dispersed in a surfactant-free medium that comprises a compatible liquid plasticizer that is nonvolatile at room temperature and is not a monomer of any of the polymeric components, the weight ratio of said particles to said plasticizer being from 40/60 to 90/10.

4,309,332

ETHYLENE-VINYL ACETATE COPOLYMER RUBBERS

Joseph Fischer, and John M. Hoyt, both of Cincinnati, Ohio, assignors to National Distillers & Chemical Corp., New York, N.Y.

Division of Ser. No. 26,149, Apr. 2, 1979, Pat. No. 4,243,576. This application May 5, 1980, Ser. No. 146,926

Int. Cl.³ C08L *31/04, 23/08*

U.S. Cl. 260—40 R **9 Claims**

1. A polymer blend demonstrating improved Mooney viscosity and green strength comprising from about 90% to about 60% by weight of an amorphous ethylenevinyl acetate copolymer containing from about 40% to about 70% copolymerized vinyl acetate by weight, and from about 10% to about 40% by weight of a modifying elastomer having a Mooney viscosity of from about 65 to about 115 ML_{1+4} at 100° C. wherein the modifying elastomer is selected from the group consisting of polychloroprene, polyacrylate rubber, polyurethane, chlorinated polyethylene, and polyester.

4,309,333

FILLED POLYOLEFIN COMPOSITIONS AND FILLER MATERIAL

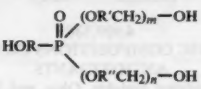
Joseph Silberberg, Brooklyn, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 31, 1979, Ser. No. 108,752

Int. Cl.³ C08K *5/53, 9/04*

U.S. Cl. 260—42.14 **8 Claims**

1. A filled polyolefin composition having improved thermal stability comprising a polyolefin resin, a filler, and an effective amount for said improved stability of a neutral dipolyoxyalkylene hydroxyalkyl phosphonate having the formula:



where R,R′ and R″ are independently C_1–C_3 alkyl and the sum of m and n is an interger from 2 to 10.

4,309,334

THERMALLY-RESISTANT GLASS-FILLED ADHESIVE/SEALANT COMPOSITIONS

Robert A. Valitsky, Unionville, Conn., assignor to Loctite Corporation, Newington, Conn.

Continuation-in-part of Ser. No. 620,905, Oct. 8, 1975, abandoned. This application Aug. 29, 1977, Ser. No. 828,802

Int. Cl.³ C08K *9/06*

U.S. Cl. 260—42.15 **14 Claims**

1. A curable adhesive and sealant composition comprising:

(a) one or more free radical curable monomers or oligomers;

(b) an initiator of free radical polymerization;

(c) a thixotropic agent in sufficient quantity to produce a sufficiently high viscosity to maintain the glass filler mixture in suspension at least for the period of time required for the composition to gel; and

(d) about 5–25% by weight of the total composition of a glass filler mixture consisting essentially of, by weight based on the total glass filler mixture:

(1) about 5 to about 50% glass microballoons;

(2) about 10 to about 50% solid glass beads;

(3) 0 to about 50% milled glass fibers; and

(4) 0 to about 40% glass powder or glass flakes;

said composition being curable through gaps of at least 5 mils and, when cured, forming a bond or seal which is resistant to destruction by thermal cycling.

4,309,335

POLYPHENYLENE OXIDE RESIN COMPOSITION STABILIZER

Mitsuo Akutsu, 6-16-30 Aoto Katsushika, Tokyo; Yutaka Nakahara, 406-71 Minamishimoarai, Iwatsuki, and Kazumi Kitsukawa, 3-12 Hikonari, Misato, all of Japan

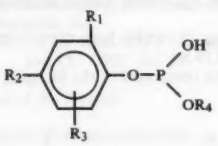
Filed Sep. 17, 1979, Ser. No. 76,300

Claims priority, application Japan, Sep. 18, 1978, 53-114325

Int. Cl.³ C08K *5/52*

U.S. Cl. 260—45.7 PH **13 Claims**

1. A polyphenylene oxide resin composition having enhanced resistance to deterioration of mechanical properties during thermal aging, comprising a polypenylene oxide resin and a stabilizing amount of orthosubstituted phenyl acid phosphite represented by the formula



in which R_1 is a t-butyl, t-amyl, cyclohexyl or phenyl group; R_2 is a hydrogen atom, an alkyl group having 1 to 5 carbon atoms, a cyclohexyl group, or a phenyl group; R_3 is a hydrogen atom or a methyl group; and R_4 is a hydrogen atom, an alkyl group having 1 to 20 carbon atoms, an ether-alkyl group having 3 to about 70 carbon atoms and 1 to 30 ether groups, an aryl group having 6 to 18 carbon atoms, a cycloalkyl group having 5 to 14 carbon atoms, an aralkyl, alkaryl, or alkoxyaryl group

having 7 to 19 carbon atoms, an ethoxylated aryl or alkaryl group having 8 to 78 carbon atoms and 1 to 30 ether groups, or a cycloalkylaryl group having 11 to 19 carbon atoms.

4,309,336

POLYMERIC COMPOSITIONS CONTAINING ANTIOXIDANTS

John T. Lai, Broadview Heights, Ohio, and Valerie B. Whitehead, Corning, N.Y., assignors to The B. F. Goodrich Company, Akron, Ohio

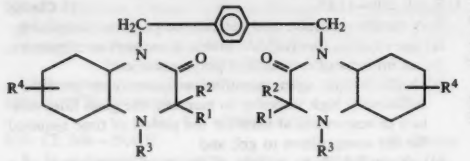
Filed May 15, 1980, Ser. No. 150,279

The portion of the term of this patent subsequent to Feb. 26, 1997, has been disclaimed.

Int. Cl.³ C08K *5/34*

U.S. Cl. 260—45.8 N **9 Claims**

1. Composition of matter comprising an organic material subject to attack by oxygen and an effective amount of antioxidant composition comprising an organic compound defined by the following structural formula:



where R^1 and R^2 are independently selected from hydrogen; alkyl and haloalkyl groups of 1 to 12 carbon atoms; cyanoalkyl, aminoalkyl, and iminoalkyl groups of 2 to 12 carbon atoms; cycloalkyl and hydroxycycloalkyl groups of 4 to 14 carbon atoms; aryl and aralkyl groups of 6 to 14 carbon atoms; R^1 and R^2 taken together form a cyclic structure selected from cycloalkyl and cycloalkenylene groups containing 4 to 14 carbon atoms; R^3 groups are independently selected from hydrogen, alkyl and hydroxyalkyl groups of 1 to 12 carbon atoms, cyanoalkyl groups of 2 to 12 carbon atoms, aminoalkyl groups of 1 to 12 carbon atoms, alkenyl groups of 2 to 14 carbon atoms, and aryl and aralkyl groups of 6 to 14 carbon atoms; and R^4 groups are independently selected from hydrogen, alkyl and haloalkyl groups of 1 to 12 carbon atoms, cyanoalkyl groups of 2 to 12 carbon atoms, aminoalkyl groups of 2 to 12 carbon atoms, alkenyl groups of 2 to 14 carbon atoms, and aryl and aralkyl groups of 6 to 14 carbon atoms.

4,309,337

NOVEL ORGANOTIN COMPOUNDS, A PROCESS FOR THEIR PREPARATION AND THEIR USE AS STABILIZERS FOR POLYVINYL CHLORIDE POLYMERS

Peter Hope, Formby, and Malcolm Mellor, St. Helens, both of England, assignors to Akzo N.V., Arnhem, Netherlands

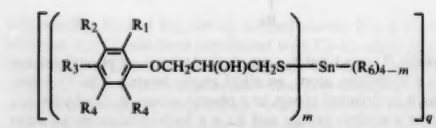
Filed Dec. 6, 1979, Ser. No. 100,962

Claims priority, application United Kingdom, Dec. 7, 1978, 47643/78

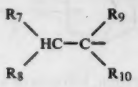
Int. Cl.³ C08K *5/58*; C07F *7/22*

U.S. Cl. 260—45.75 S **10 Claims**

1. An organotin compound of the formula:



wherein q is 1 or 2; m is 1, 2 or 3; R_6 is an alkyl group having from 1 to 18 carbon atoms, a cycloalkyl group having from 3 to 6 carbon atoms, an aryl group, an aralkyl group, an alkaryl group having up to 30 carbon atoms or a group of the formula:



wherein R_7, R_8, R_9 and R_{10} are each independently an alkyl group having from 1 to 18 carbon atoms, an oxygen-containing hydrocarbon group or a hydrogen atom, with the proviso that at least one of R_7 and R_8 contains, adjacent to the HC grouping, a carbonyl group which forms part of an acid group, an ester group, an acid halide group, a ketone group or an aldehyde group; when q=1, R_1, R_2, R_3, R_4 and R_5, are, each independently, a hydrogen atom, an alkyl or alkoxy group having from 1 to 14 carbon atoms, a cycloalkyl or cycloalkoxy group, having from 3 to 6 carbon atoms, a nitro group or a halogen atom; and when q=2, m=1, and the two structural units in the para position are interlinked, directly or by way of an oxygen atom, a methylene group, an SO_2 group or an isopropylidene group, and R_1, R_2, R_4 and R_5 are each as defined above.

8. A composition of matter comprising a vinyl chloride polymer and a stabilizing amount of an organotin compound of the formula of claim **1**.

4,309,338

PROCESS FOR PREPARING AQUEOUS DISPERSION OF ROSIN-BASE MATERIALS

Toshiharu Okumichi, Suita, and Kimio Kawatani, Daito, both of Japan, assignors to Arakawa Kagaku Kogyo Kabushiki Kaisha, Japan

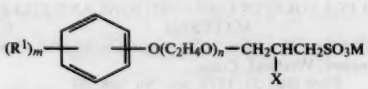
Division of Ser. No. 113,604, Jan. 21, 1980, Pat. No. 4,267,099. This application Oct. 29, 1980, Ser. No. 201,762

Claims priority, application Japan, Feb. 7, 1979, 54-13516; Mar. 28, 1979, 54-37567

Int. Cl.³ C09F *1/04*; C08L *93/04*

U.S. Cl. 260—101 **9 Claims**

1. A process for preparing an aqueous dispersion of a rosin-base material by mixing together a melt of the rosin-base material, a dispersant and water to obtain a dispersion comprising a continuous phase of the rosin-base material and a dispersed phase of the water, and adding water to the dispersion to invert the dispersion to the contemplated aqueous dispersion comprising a dispersed phase of the rosin-base material and a continuous phase of the water, said rosin-base material comprising 0 to 95% by weight of rosins and 5 to 100% by weight of fortified rosins, the process being characterized in that the dispersant is at least one salt of sulfuric acid half ester represented by the formula



[I]

wherein R^1 is a hydrocarbon residue having 4 to 18 carbon atoms, m is an integer of 1 or 2, n is an integer of 4 to 25, X is hydrogen or hydroxyl, and M is a monovalent cation.

4,309,339

LEUCINE-RICH 3,1-S-α_2-GLYCOPROTEIN, PROCESS FOR ISOLATING IT AND ITS USE

Heinz Haupt, and Siegfried Baudner, both of Marburg, Fed. Rep. of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Fed. Rep. of Germany

Continuation of Ser. No. 898,437, Apr. 20, 1978, abandoned. This application Dec. 14, 1979, Ser. No. 103,868

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1977, 2718325

Int. Cl.[3] **C07G** *7/00*

U.S. Cl. 260—112 B **5 Claims**

1. Glycoprotein isolated from human serum, characterized by the following parameters:

(a) sedimentation constant in the ultracentrifuge 3.1 S±0.2;

(b) molecular weight of 49,000±4,000;

(c) electrophoretic mobility in the range of the α_2-globulins of the human serum;

(d) isoelectric range pH 3.8–4.1;

(e) extinction coefficient $E_{1\ cm}^{1\%}$, 280 nm=7.0±0.2;

(f) content of about 77%±2% of α-amino-acids and about 23%±2% of carbohydrates, and of said amino acids and carbohydrates, the major fractions being present as follows:

Amino Acids	Mole % of the amino-acid proportion	Variation coefficient %
Aspartic acid	11.45	1.49
Serine	6.43	2.36
Glutamic acid	10.72	2.51
Proline	7.04	4.43
Glycine	7.32	2.31
Alanine	6.65	1.97
Leucine	22.05	5.79

Carbohydrate Residues	% by weight
Galactose	4.1 ± 0.3
Mannose	3.8 ± 0.3
N-Acetylhexosamine	8.1 ± 0.5
N-Acetylneuraminic acid	6.6 ± 0.4

(g) specific immunological reactions with antibodies directed against the glycoprotein.

4,309,340

POLYPEPTIDE COMPOSITIONS

Dimitrios Sarantakis, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Mar. 31, 1980, Ser. No. 135,420

Int. Cl.[3] **C07C** *103/52*

U.S. Cl. 260—112.5 R **4 Claims**

1. A polypeptide having the following formula:

R-X_1-Lys-X_3-Val-X_5-R_1

wherein

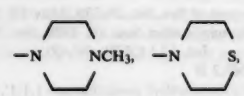
R is hydrogen, alkanoyl of 1–4 carbon atoms or aroyl of 6–10 carbon atoms;

X_1 is L-Arg, D-Arg or D-homoarginine;

X_3 is Asn, Gln or the N-substituted carboxamides thereof;

X_5 is L- or D-Tyr, L- or D-Phe, L- or D-Trp, L- or D-Leu, L- or D-Met, D-Met-ol-oxide or D-Phe-ol; and

R_1 is amino, monoalkylamino of 1–4 carbon atoms, dialkylamino of 1–4 carbon atoms, hydroxy, alkoxy of 1–4 carbon atoms,



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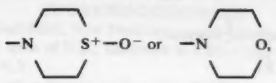


or the fully protected peptide-resin intermediates thereof, or pharmaceutically acceptable salts thereof.

4,309,341

METHOD FOR PURIFYING α-L-ASPARTYL-L-PHENYLALANINE LOWER ALKYL ESTER

Masashige Kubo; Yuji Nonaka, both of Shin-nanyo, and Keiichi Kihara, Tokuyama, all of Japan, assignors to Sagami Chemical Research Center; Ajinomoto Co., Inc., both of Tokyo and Toyo Soda Mfg. Co. Ltd., Shin-nanyo, all of, Japan

Filed Apr. 9, 1980, Ser. No. 138,728

Claims priority, application Japan, Apr. 10, 1979, 54-43274

Int. Cl.[3] **C07C** *103/52*

U.S. Cl. 260—112.5 R **4 Claims**

1. A method for purifying an α-L-aspartyl-L-phenylalanine lower alkyl ester containing impurities including α-L-aspartyl-L-phenylalanine and 3-benzyl-6-carboxymethyl-2,5-diketopiperazine, and which comprises contacting the α-L-aspartyl-L-phenylalanine lower alkyl ester with a Cl-type anion exchange resin in an aqueous solvent, thereby adsorbing the impurities in the anion exchange resin and recovering the α-L-aspartyl-L-phenylalanine lower alkyl ester in a purified state.

4,309,342

ANTIBACTERIAL PEPTIDES

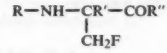
Daniel T. Chu, Lake Villa; Jerry R. Martin, Waukegan, and Alford M. Thomas, Wadsworth, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Jul. 3, 1980, Ser. No. 165,583

Int. Cl.[3] **C07C** *103/52;* **A61K** *31/42, 31/195;* **C12P** *13/06*

U.S. Cl. 260—112.5 R **8 Claims**

1. A dipeptide of the formula



wherein the shown aminoacid is in the D-configuration, R is hydrogen or an easily removable, protective group, R′ is hydrogen or deuterium and R″ is a protein derived aminoacid in the L-configuration, or the corresponding loweralkyl esters, or a nontoxic acid addition salt thereof.

4,309,343

PHARMACOLOGICALLY ACTIVE PEPTIDES

Paul D. Gesellchen, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 25, 1980, Ser. No. 210,210

Int. Cl.[3] **C07C** *103/52*

U.S. Cl. 260—112.5 E **41 Claims**

1. A compound of the formula

[R-Tyr-A-Gly-(N-R_1)Phe(p-Y)-X]$_2$-$(CH_2)_n$

in which

R is hydrogen or methyl;

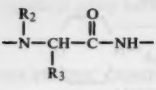
A is the residue of a D-amino acid selected from the group consisting of Ala, Abu, Ser, Thr, and Met;

R_1 is hydrogen, C_1–C_3 primary alkyl, cyclopropylmethyl, or allyl;

Y is hydrogen or fluoro;

n is an integer from 1 to 10; and

X is —NH— or a group of the formula



in which R_2 is hydrogen or C_1–C_3 primary alkyl; R_3 is phenyl, 2-methylthioethyl, or isobutyl; or R_2 and R_3 taken together are $—CH_2—CH_2—CH_2—$;

subject to the limitation that, when R_2 is other than hydrogen, R_1 is hydrogen.

4,309,344

PROCESS FOR THE PRODUCTION OF A PROTEIN ISOLATE HAVING IMPROVED WHITENESS

James E. Walsh, St. Louis, Mo., assignor to Ralston Purina Company, St. Louis, Mo.

Filed Sep. 7, 1979, Ser. No. 73,407
Int. Cl.³ A23J *1/14*
U.S. Cl. 260—123.5 **33 Claims**

1. A process for the production of a protein isolate from a defatted vegetable protein material comprising:

(a) extracting a vegetable protein material with an aqueous extractant to provide an aqueous protein extract having a pH of at least about 6.5;

(b) adjusting the pH of said extract to the isoelectric point of the protein to precipitate the protein;

(c) heating the precipitated protein to a temperature of between about 115°-145° F. followed by;

(d) concentrating the protein precipitate to to a solids level of above about 44% by weight.

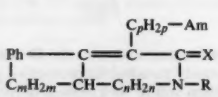
4,309,345

INDENO AND NAPHTH[1,2-d]AZEPINES

Norbert Gruenfeld, White Plains, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 856,703, Dec. 2, 1977, Pat. No. 4,173,633. This application Jan. 10, 1979, Ser. No. 2,440
Int. Cl.³ C07D *223/14, 223/32*; A61K *31/55*
U.S. Cl. 260—239 BB **5 Claims**

1. A compound of the formula



wherein Ph is unsubstituted 1,2-phenylene, or 1,2-phenylene substituted by up to 3 members selected from lower alkyl, hydroxy, mercapto, lower alkoxy, lower alkylthio, lower alkenyloxy, halogeno and trifluoromethyl; C_mH_{2m} is lower alkylene separating the adjacent atoms by one or two carbon atoms; C_nH_{2n} is lower alkylene separating the adjacent atoms by two carbon atoms; p is an integer from 1 to 7; Am is amino, mono- or di-lower alkylamino; X represents two hydrogens and R is hydrogen, lower alkyl or hydroxyalkyl; or a therapeutically acceptable acid addition salt thereof.

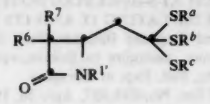
4,309,346

PROCESS FOR THE PREPARATION OF 1-CARBAPENEMS AND INTERMEDIATES VIA TRITHIOORTHOACETATES

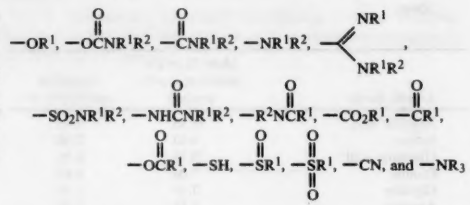
Burton G. Christensen, Scotch Plains; Ronald W. Ratcliffe, Matawan, and Thomas N. Salzmann, North Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 27, 1980, Ser. No. 134,396
Int. Cl.³ C07D *205/08, 487/04*
U.S. Cl. 260—239 A **8 Claims**

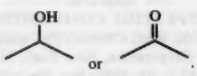
1. A compound having the structural formula:



wherein $R^{1'}$ is hydrogen or a readily removable trialkylsilyl protecting group; R^a, R^b and R^c are independently selected from the group consisting of alkyl having 1–6 carbon atoms, phenyl and phenylalkyl having 7–10 carbon atoms; and wherein R^6 and R^7 are independently selected from the group consisting of: hydrogen; mono substituted and unsubstituted: alkyl, alkenyl, and alkynyl, having from 1–10 carbon atoms; cycloalkyl, cycloalkylalkyl, and alkylcycloalkyl, having 3–6 carbon atoms in the cycloalkyl ring and 1–6 carbon atoms in the alkyl moieties; phenyl; aralkyl, aralkenyl, and aralkynyl wherein the aryl moiety is phenyl and the aliphatic portion has 1–6 carbon atoms; wherein the substituent or substituents relative to the above-named radicals are selected from the group consisting of: chloro, bromo, fluoro, R^1,



wherein, relative to the above listed substituents on R^6, and R^7, the group R^1 and R^2 are independently selected from: hydrogen, alkyl, alkenyl and alkynyl, having from 1–10 carbon atoms; cycloalkyl, cycloalkylalkyl, and alkylcycloalkyl, having 3–6 carbon atoms in the cycloalkyl ring and 1–6 carbon atoms in the alkyl moieties; phenyl; aralkyl, aralkenyl and aralkynyl wherein the aryl moiety is phenyl and the aliphatic portion has 1–6 carbon atoms; R^6 and R^7 are not both hydrogen at the same time; when R^6/R^7 is hydrogen, then R^7/R^6 is not



4,309,347

PENICILLANOYLOXYMETHYL PENICILLANATE 1,1,1',1'-TETRAOXIDE

Eric C. Bigham, Chapel Hill, N.C., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 39,539, May 16, 1979, Pat. No. 4,244,951. This application Sep. 10, 1980, Ser. No. 185,849
Int. Cl.³ C07D *499/00*
U.S. Cl. 260—245.2 R **1 Claim**

1. Penicillanoyloxymethyl penicillanate 1,1,1',1'-tetraoxide.

4,309,348

TRICYCLIC INDOLE DERIVATIVES

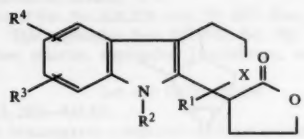
Andre A. Asselin, St. Laurent; Leslie G. Humber, Dollard des Ormeaux; Gervais Dionne, St. Laurent; Clara Revesz, Montreal, and Amedeo Failli, St. Laurent, all of Canada, assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 38,994, May 14, 1979, Pat. No. 4,235,901, which is a division of Ser. No. 904,081, May 8, 1978, Pat. No. 4,179,503. This application Jun. 13, 1980, Ser. No. 159,264

Int. Cl.[3] C07D *491/056, 495/04*

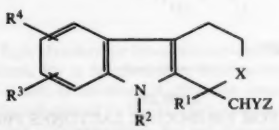
U.S. Cl. 260—326.28 7 Claims

1. A compund selected from the group of those of formula VIa



(VIa)

in which R^1 is lower alkyl; R^2 is hydrogen or lower alkyl; R^3 and R^4 each independently is hydrogen, lower alkyl, halo, nitro, trifluoromethyl or lower alkoxy; and X is oxa or thia and those of formula IV



(IV)

in which R^1 is lower alkyl; R^2 is hydrogen or lower alkyl; R^3 and R^4 each independently is hydrogen, lower alkyl, halo, nitro, trifluoromethyl or lower alkoxy; X is oxa or thia; Y is selected from the group consisting of:

a. $COOR^8$ wherein R^8 is hydrogen or lower alkyl, or a radical of formula Alk^3-$COOR^8$ wherein Alk^3 is a straight or branched chain lower alkylene having one to five carbon atoms and R^8 is as defined herein;

b. $CONR^5R^6$ wherein R^5 and R^6 each is hydrogen or lower alkyl, or a radical of formula Alk^3-$CONR^5R^6$ wherein Alk^3, R^5 and R^6 are as defined herein;

c. a radical of formula Alk^1-NR^5-COR^9 wherein Alk^1 is a straight or branched chain lower alkylene having one to six carbon atoms, R^5 is as defined herein and R^9 is hydrogen or lower alkyl;

d. a radical of formula Alk^1-halo wherein Alk^1 is as defined herein and halo is chloro, bromo or iodo;

e. a radical of formula Alk^1-NO_2 wherein Alk^1 is as defined herein; and

f. a radical of formula Alk^1-NR^5R^6 wherein Alk^1, R^5 and R^6 are as defined herein;

and Z is selected from the group consisting of:

a. $COOR^{10}$ wherein R^{10} is hydrogen or lower alkyl, or a radical of formula Alk^4-$COOR^{10}$ wherein Alk^4 is a straight or branched chain lower alkylene having one to five carbon atoms and R^{10} is as defined herein;

b. a radical of formula Alk^2-$OCOR^{11}$ wherein Alk^2 is a straight or branched chain lower alkylene having one to six carbon atoms and R^{11} is lower alkyl; and

c. a radical of formula Alk^2-OR^7 wherein Alk^2 is as defined herein and R^7 is hydrogen or lower alkyl with the proviso that when Y is a radical of formula Alk^1-NR^5R^6 then Z is selected from the group consisting of $COOR^{10}$, and Alk^2-$OCOR^{11}$.

4,309,349

STEREOSPECIFIC PROCESS FOR PREPARING EPOXYBENZODIOXANS

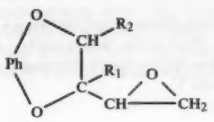
Heinz W. Gschwend, New Providence, and Charles F. Huebner, Chatham, both of N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 27,705, Apr. 9, 1979, abandoned, which is a continuation of Ser. No. 19,993, Mar. 12, 1979, Pat. No. 4,261,907, which is a division of Ser. No. 873,456, Jan. 30, 1978, abandoned. This application Oct. 1, 1980, Ser. No. 193,509

Int. Cl.[3] C07D *407/04*

U.S. Cl. 260—340.3 9 Claims

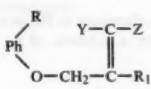
1. A process for the stereospecific preparation of a compound of the formula



(V)

wherein Ph is unsubstituted 1,2-phenylene or 1,2-phenylene substituted by one to three identical or different members selected from lower alkyl, hydroxy, lower alkoxy, lower alkylenedioxy, benzyloxy, lower alkanoyloxy, halogeno, trifluoromethyl or nitro; and R_1 and R_2 is hydrogen or lower alkyl;

which comprises: (a) reacting a compound of formula II wherein



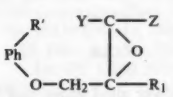
(II)

Ph, R_1, R_2 have meaning defined above, R is CHO, one of Y and Z is R_2 and the other is CH_2X wherein X is a halogen atom,

with a compound R_4-OOH

wherein R_4 is hydrogen, lower alkanoyl, lower haloalkanoyl, HPhCO, HOOC-C_2H_4-CO, or HOOC-Ph-CO

(b) cyclizing resulting compound III



(III)

wherein R' is formyloxy and Ph, R_1, Y and Z have meanings as defined in (a), with a base, being aqueous alkali, alkaline earth metal hydroxide or a strong quaternary nitrogen base.

4,309,350

PROCESS OF MAKING PHENYLACRYLIC ESTERS

George Holan, Brighton, and Reimund Walser, Box Hill, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

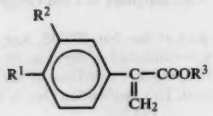
Division of Ser. No. 742,575, Nov. 17, 1976, Pat. No. 4,220,591. This application Jan. 24, 1980, Ser. No. 115,044

Claims priority, application Australia, Nov. 26, 1975, PC4078

Int. Cl.[3] C07D *317/06;* C07C *101/00, 79/46, 69/76*

U.S. Cl. 260—340.5 R 10 Claims

1. A method for the preparation of phenylacrylic esters of the formula II



II

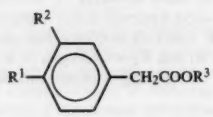
wherein

R^1 is hydrogen or a methoxy, ethoxy, propoxy, methylthio, ethylthio, propylthio, fluoro, chloro, bromo, methyl, ethyl, nitro or amino group, and R^2 is a hydrogen or methyl group;

or R^1 and R^2 together form a methylenedioxy group;

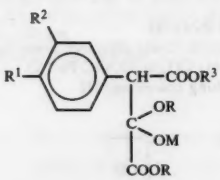
and R^3 is a lower alkyl group, which method comprises:

(1) condensing the appropriately substituted phenol acetic ester of formula V



V

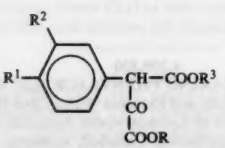
with a di(lower alkyl)oxalate in the presence of a basic catalyst, to produce a solution of an enolate salt of formula IV



IV

wherein R is a lower alkyl group and M is an alkali metal,

(2) acidifying the solution of the salt IV to give the corresponding phenyloxaloacetate III



III

(3) reacting the compound III with formaldehyde under alkaline conditions to give the corresponding phenyl hydroxymethyl acetate which spontaneously dehydrates to the ester II,

each of the steps (1), (2) and (3) being carried out at room temperature.

4,309,351

CHEMICAL SYNTHESIS

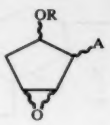
Josef Fried, Chicago, Ill., assignor to The University of Chicago, Chicago, Ill.

Continuation of Ser. No. 967,206, Dec. 7, 1978, abandoned, which is a continuation-in-part of Ser. No. 905,135, May 12, 1978, which is a continuation-in-part of Ser. No. 611,855, Sep. 10, 1975, abandoned, which is a continuation-in-part of Ser. No. 400,297, Sep. 24, 1973, abandoned, which is a continuation of Ser. No. 361,664, May 18, 1973, abandoned, which is a continuation-in-part of Ser. No. 53,663, Jul. 9, 1970, abandoned. This application Feb. 4, 1980, Ser. No. 118,266

Int. Cl.³ C07C *177/00*

U.S. Cl. 260—340.9 P **1 Claim**

1. An optically active compound of the formula:



wherein A is CH_2OH, or

and R is hydrogen.

4,309,352

PROCESS FOR PRODUCING LACTONES FROM UNSATURATED CARBONYL COMPOUNDS

T. L. Ho, Jacksonville, Fla., assignor to SCM Corporation, New York, N.Y.

Filed Nov. 24, 1980, Ser. No. 209,645

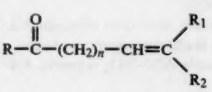
Int. Cl.³ C07D *307/32, 309/30*

U.S. Cl. 260—343.5 **18 Claims**

1. The method of making an alkyl substituted lactone which comprises the steps of reacting a hydride reagent or a C_1–C_{12} alkyl organometallic compound having the formula:

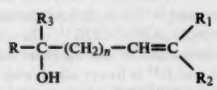
$$R_3M \qquad (I)$$

wherein R_3 is selected from hydrogen and C_1–C_{11} alkyl or substituted alkyl groups, M is an alkali metal or magnesium halide, with a mono-alkenyl carbonyl having the formula:



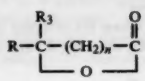
(II)

wherein R is a hydrogen, C_1–C_6 alkyl group or alkoxy group and R_1, and R_2 are independently selected from hydrogen and a C_1–C_6 alkyl group, and n is an integer selected from 2 and 3, to form an unsaturated alcohol having the formula:



(III)

wherein R, R_1, and R_3 and n have the meanings ascribed above, the reactants (I) and (II) being present in a molar ratio of at least about 1:1, oxidatively cleaving (III) to form an alkyl substituted lactone having the formula:



(IV)

wherein R, R_3 and n are as described above, and recovering said lactone (IV).

4,309,353

BENZOPYRANE DERIVATIVES

Pier G. Ferrini, Binningen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

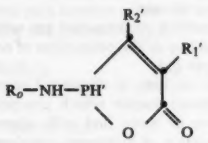
Division of Ser. No. 826,224, Aug. 19, 1977, Pat. No. 4,205,082. This application Nov. 21, 1979, Ser. No. 97,025

Claims priority, application Luxembourg, Aug. 31, 1976, 75688

Int. Cl.³ C07D *311/08*

U.S. Cl. 260—343.45 4 Claims

1. A benzopyrane compound having the formula



in which R_o is glycoloyl or lower alkoxy-acetyl having up to 6 carbon atoms, Ph' is 1,2-phenylene which contains the group R_o—NH— and, in addition, is otherwise unsubstituted or is additionally substituted by lower alkyl, lower alkoxy, halogen, hydroxyl and trifluoromethyl, R_1' and R_2' conjointly are tri-, tetra- or penta-methylene, or R_1' is hydrogen, lower alkanoyl, carboxyl, lower alkoxy-carbonyl, lower alkyl, or phenyl or pyridyl which are unsubstituted or substituted by lower alkyl, lower alkoxy, halogen, hydroxyl and trifluoromethyl, and R_2' has one of the meanings given for R_1' or is hydroxyl, lower alkoxy, or lower alkanoyloxy, or a pharmaceutically acceptable salt thereof.

4,309,354

CHROMONE DERIVATIVES

Seiichiro Nomoto; Hironori Ikuta, both of Tokyo; Yoshimasa Machida, Wako; Shigeto Negi, Kodaira; Isao Sugiyama, Tokyo; Hiroshi Yamauchi, Gifu; Kenro Nakatsuka, Matsudo, and Isao Saito, Aza-Sori, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

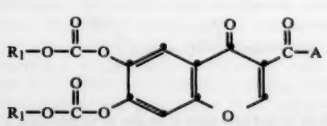
Filed Dec. 19, 1980, Ser. No. 218,403

Claims priority, application Japan, Oct. 7, 1980, 55-139269

Int. Cl.³ C07D *311/22*

U.S. Cl. 260—345.2 4 Claims

1. Chromone derivatives having the formula:



wherein A represents a hydrogen atom, a halogen atom or a hydroxyl group, and R_1 represents a lower alkyl or a chloro-substituted lower alkyl group.

4,309,355

CATALYTIC OXIDATIVE DEHYDROGENATION OF ALKENES OR ALKADIENES TO FURAN COMPOUNDS

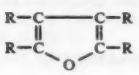
R. Parthasarathy, and Eugene V. Hort, both of Wayne, N.J., assignors to GAF Corporation, New York, N.Y.

Division of Ser. No. 187,700, Sep. 16, 1980. This application Jan. 29, 1981, Ser. No. 229,411

Int. Cl.³ C07D *307/36*

U.S. Cl. 260—346.11 4 Claims

1. A process which comprises reacting at least one unsaturated acyclic feed hydrocarbon selected from the group consisting of alkenes and alkadienes having 4 to 10 carbon atoms, with oxygen in contact with a catalyst composition consisting essentially of silver molybdenum and oxygen, and at least one promotor selected from the group consisting of phosphorus, arsenic, antimony and bismuth, with the silver to molybdenum atom ratio being in the range of 0.25:1 to about 10:1, and the promotor to molybdenum atom ratio being in the range of 0.005:1 to 0.5:1 under suitable vapor-phase reaction conditions for the conversion of said at least one unsaturated acyclic feed hydrocarbon to at least one furan compound having the formula



wherein each R is individually selected from the group consisting of hydrogen and alkyl radicals having from 1 to 6 carbon atoms, the total carbon atoms in the R radicals being in the range of 0 to 6; and recovering at least a portion of the furan compounds thus produced.

4,309,356

OXIDATIVE DEHYDROGENATION OF ALKENES OR ALKADIENES TO FURAN COMPOUNDS

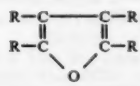
R. Parthasarathy, and Eugene V. Hort, both of Wayne, N.J., assignors to GAF Corporation, New York, N.Y.

Division of Ser. No. 183,911, Sep. 4, 1980. This application Feb. 17, 1981, Ser. No. 235,280

Int. Cl.³ C07D *307/36*

U.S. Cl. 260—346.11 4 Claims

1. A process which comprises reacting at least one unsaturated acyclic feed hydrocarbon selected from the group consisting of alkenes and alkadienes having from 4 to 10 carbon atoms, with oxygen in contact with a catalyst consisting essentially of silver, molybdenum and oxygen, with the silver-to-molybdenum atom ratio being in the range of 0.25:1 to about 10:1, under suitable vapor-phase reaction conditions for the conversion of said at least one unsaturated acyclic feed hydrocarbon to at least one furan compound having the formula



wherein each R is individually selected from the group consisting of hydrogen and alkyl radicals having from 1 to 6 carbon atoms, the total carbon atoms in the R radicals being in the range of 0 to 6; and recovering at least a portion of the furan compounds thus produced.

4,309,357

PROCESS FOR PREPARING DIENOIC ACIDS

Gian P. Chiusoli, Parma; William Giroldini, Bibbiano, and Giuseppe Salerno, Parma, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Mar. 7, 1980, Ser. No. 128,083
Claims priority, application Italy, Mar. 8, 1979, 20824 A/79
Int. Cl.[3] C07C *51/00*
U.S. Cl. 260—413 12 Claims

1. A process for the preparation of dienoic acids having double bonds in a conjugated position, which process comprising reacting a vinyl halide of the formula: R—CH=CHX, wherein R is selected from the group consisting of hydrogen, hydrocarbylic groups having from 1 to 20 carbon atoms, and said hydrocarbylic groups substituted by substituents inert under the reaction conditions, and X is chlorine or bromine, with a salt of 3-butenoic acid of the formula: CH_2=CH—CH_2=COOM, wherein M is a metal selected from the group consisting of Na, K, ½ Ca, ½ Mg or the group NR'_4 wherein $(R')_4$ are alkyl groups having from 1 to 12 carbon atoms, in an organic medium and under an inert atmosphere, at a temperature above 50° C. and at atmospheric pressure, in the presence of a catalyst selected from the group consisting of phosphinic complexes of rhodium and nickel having the formulae:

$$RhCl(PR''_3)_x(ol)_y \text{ and } Ni(PR''_3)_z$$

wherein R'' is a hydrocarbylic group having from 1 to 8 carbon atoms; "ol" is an olefin selected from the group consisting of olefins having a number of carbon atoms comprised between 2 and 8 and chelating olefins having 6 to 8 carbon atoms, and where x is an integer comprised between 1 and 3, y is an integer comprised between 0 and 2 and such that $x+y=3$, and z is a number comprised between 3 and 4.

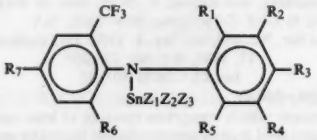
4,309,358

AGRICULTURAL STANNANAMINES

Caleb W. Holyoke, Jr., Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 5, 1980, Ser. No. 146,417
Int. Cl.[3] C07F *7/22*
U.S. Cl. 260—429.7 15 Claims

1. A compound of the formula



wherein

Z_1, Z_2 and Z_3 are independently C_1–C_8 allyl, C_5–C_6 cycloalkyl or phenyl;

R_1, R_3 and R_4 are independently H, F, Cl, Br, NO_2, CF_3, OCF_2H, OCF_3, OCF_2CF_2H or $S(O)_kR_9$; and

R_3 and R_4 can be taken together to form —OCF_2O— or —OCF_2OCF_2—;

R_2 is H, F, Cl, Br, NO_2, CF_3 or $S(O)_kR_9$;

R_5 is H, Cl, F, Br or NO_2;

R_6 is H, NO_2 or CF_3;

R_7 is NO_2 or CF_3;

k is 0, 1 or 2;

R_9 is C_1–C_2 alkyl, optionally substituted with 2–4 Cl or F

provided that

(1) at least two of R_1, R_2, R_3, R_4 and R_5 are hydrogen;

(2) no more than two of the substituents R_1, R_2, R_3 and R_4 are simultaneously NO_2 or CF_3;

(3) when two NO_2 or two $S(O)_kR_9$ groups are present they are not ortho to one another, and further provided that when R_6 is NO_2, then

(a) R_1 is H, F or Cl when R_3 or other than H, F, or Cl;

(b) when $R_1=R_3=R_5$, then R_1, R_3 and R_5 are either H or F; and

(c) R_5 is either H or F.

4,309,359

ENERGY PROCESS IN METHANOL SYNTHESIS

Alwyn Pinto, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Dec. 12, 1977, Ser. No. 860,311
Claims priority, application United Kingdom, Dec. 15, 1976, 52304/76
Int. Cl.[3] C07C *29/15*
U.S. Cl. 518—705 9 Claims

1. In a process for producing methanol by the steps of:

(a) reacting a methanol synthesis gas containing hydrogen and at, least one of carbon monoxide and carbon dioxide over a methanol synthesis catalyst to effect partial conversion to methanol;

(b) cooling the resulting partly reacted gas and separating methanol from it;

(c) recycling unreacted gas from separation Step (b) to synthesis Step (a); and

(d) purging a portion of unreacted gas whereby to prevent excessive build-up of the proportion of non-reacting gases in the synthesis gas,

the improvement resulting in decreased energy consumption per unit of methanol output which comprises passing said purged gas to one or more fuel cells whereby to generate electricity by oxidation of hydrogen contained therein.

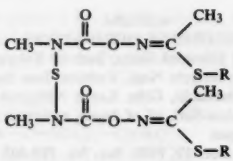
4,309,360

PROCESS FOR THE PRODUCTION OF BIS-[O-(1-ALKYLTHIOETHYLIMINO)-N-METHYLCARBAMYL]N,N'-SULFIDES

Jean-Pierre Ledouble, Rosenau, France, and Klaus Müller, Reinach, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

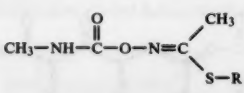
Filed Jun. 6, 1980, Ser. No. 156,965
Claims priority, application Switzerland, Jun. 18, 1979, 5670/79
Int. Cl.[3] C07C *119/18*; A01N *37/18*
U.S. Cl. 260—453.1 11 Claims

1. In a process for the production of bis-[O-(1-alkyl-thioethylimino)-N-methylcarbamyl]-N,N'-sulfides of the formula I



(I)

wherein R is a straight-chain or branched alkyl group of 1 to 5 carbon atoms, by reacting a O-(1-alkylthioethylimino)-N-methylcarbamate of the formula



(II)

wherein R is as defined above, in the presence of a base, with sulfur dichloride or sulfur monochloride in an inert solvent, the improvement which comprises carrying out said reaction in the presence of 0.01 to 0.5 mole of a catalytic compound selected from the group consisting of N,N-dialkylformamides,

each containing 1 to 4 carbon atoms in the alkyl moieties, N-methylpyrrolidone, dimethyl sulfoxide, phosphoric acid tris-N,N-dimethylamide and tetramethyl urea, per mole of O-(1-alkylthioethylimino)-N-methylcarbamate of the formula II.

4,309,361

AMMOXIDATION OF OLEFINS WITH NOVEL ANTIMONATE CATALYSTS

Dev D. Suresh, Macedonia; Robert K. Grasselli, Chagrin Falls, and David A. Orndoff, Windsor, all of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 57,853, Jul. 16, 1979, abandoned, which is a continuation-in-part of Ser. No. 862,268, Dec. 20, 1977, abandoned. This application Dec. 28, 1979, Ser. No. 108,324

Int. Cl.³ C07C *120/14*

U.S. Cl. 260—465.3 **9 Claims**

1. In an ammoxidation process for producing a nitrile in which a reactant selected from propylene and isobutylene together with oxygen and ammonia in the vapor phase are contacted with a catalyst at elevated temperature, the improvement wherein said catalyst is free of uranium and tellurium and defined by the general formula

$$A_aB_bC_cFe_dBi_eSb_fO_x$$

wherein

A is Cu, V, Cr and/or Mn;

B is alkali metal, alkaline earth metal, Co, Ni, Zn, Cd, rare earth metal other than Ce, Ga, In, Tl and/or Th;

C is Mo, W, Nb, Ta, Sn, Ge, Ti, Zr, P, B and/or As; and

wherein

a is about 3 to 5,

b is 0 to 20,

c is about 1 to 3,

d is 12,

e is about 2,

f is about 25 to 27, and

x is a number sufficient to satisfy the valence requirements of the other elements present.

4,309,362

PROCESS FOR THE OPTICAL RESOLUTION OF DL-P-HYDROXY-PHENYLGLYCINE

Ichiro Chibata, Suita; Shigeki Yamada, Toyonaka, and Chikara Hongo, Osaka, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Continuation of Ser. No. 756,079, Jan. 3, 1977, abandoned. This application Mar. 13, 1978, Ser. No. 885,804

Claims priority, application Japan, Jan. 13, 1976, 51/3344; Jan. 13, 1976, 51/3345

Int. Cl.³ C07C *145/00*

U.S. Cl. 260—501.12 **17 Claims**

1. A process for resolving a racemic modification selected from the group consisting of DL-p-hydroxyphenylglycine benzenesulfonate , DL-p-hydroxyphenylglycine p-ethylbenzenesulfonate, DL-p-hyroxyphenylglycine o-toluenesulfonate and DL-p-hyroxyphenylglycine sulfosalicylate which comprises preparing a supersaturated solution of said racemic modification in an inert solvent therefore, adding crystals of a desired enantiomer of said modification to the solution before and/or after said solution reaches the condition of supersaturation so that the proportion of one of the enantiomers becomes greater than that of the other enantiomer, allowing crystallization to take place, and recovering the separated crystals therefrom.

4,309,363

NOVEL PROCESS

John A. Patterson, Fishkill, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed May 31, 1979, Ser. No. 44,789

Int. Cl.³ C07C *143/02*

U.S. Cl. 260—513 R **13 Claims**

1. The method which comprises

adding a metal isethionate carboxylate to a pyrolysis zone;

maintaining said pyrolysis zone containing said metal isethionate carboxylate at pyrolyzing conditions including temperature of 150° C.-300° C. during a decomposition period thereby forming product metal vinyl sulfonate and carboxylic acid; and

recovering said product metal vinyl sulfonate from said pyrolysis zone.

4,309,364

DIPHOSPHONATES

Craig L. Bentzen, Onex; Lan N. Mong, Nyon, and Eric Niesor, Gland, all of Switzerland, assignors to Symphar S.A., Le Lignon, Switzerland

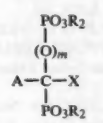
Filed Jan. 22, 1980, Ser. No. 114,423

Claims priority, application United Kingdom, Feb. 13, 1979, 4992/79; Sep. 25, 1979, 33157/79

Int. Cl.³ C07F *9/11, 9/40*; A61K *31/66*

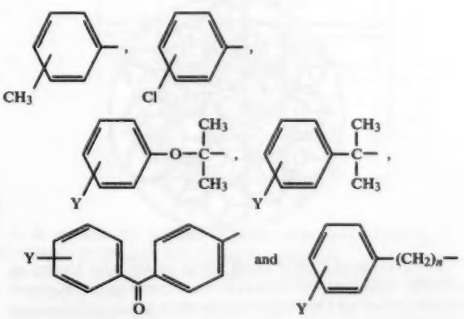
U.S. Cl. 260—931 **11 Claims**

1. Diphosphonate methyl esters represented by general formula (I)



(I)

where X is H or OH, R is CH_3, m is zero or 1, and A is selected from the group comprising



where n is integer from 1 to 6 and Y is H, CH_3 or Cl.

4,309,365

NON-CORROSIVE, NON-STAINING EVAPORATIVE COOLER

David Van Ness, 7502 E. Sage Dr.; Joseph Hines, 4525 E. Pescar, both of Scottsdale, Ariz. 85253, and William E. Wells, 4352 E. Cherokee, Phoenix, Ariz. 85044

Filed Mar. 3, 1980, Ser. No. 126,870

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—29 **10 Claims**

1. A cabinet for an evaporative cooler comprising:

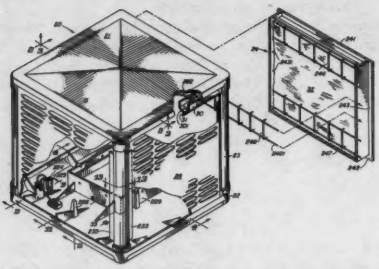
a base having four corners;

a top having four corners;

four corner posts; and

four ventilator panels adapted to have a cooling pad mounted on each panel;

said base, top, corner posts, and panels each being precision molded of a plastic material, said base and top having self-locating and self-jigging mounting means formed in



each corner, and said corner posts having mounting means formed at each end for cooperating with the mounting means of the base and top to removably secure the base and top together to form said cabinet and to provide means for removably securing the ventilator panels to the cabinet.

4,309,366

INDUCED DRAFT COOLING TOWER WITH IMPROVED INNER SUPPORT STRUCTURE

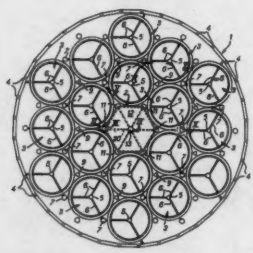
Bernard Fougea, Neuilly-sur-Seine, France, assignor to Coignet S.A., Paris, France

Filed Jun. 20, 1981, Ser. No. 161,355

Claims priority, application France, Jun. 20, 1979, 79 15764

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—109 **13 Claims**



1. An induced draft cooling tower of the type having an annular outer support structure for supporting a dispersion section including a hot water supply basin and an inner support structure for supporting a ventilation section essentially constructed of precast reinforced concrete elements supporting a plurality of regularly spaced diffusers, each of the diffusers being adapted to accommodate blower and drive means at its base, said inner support structure comprising a regular hexagonal cenral tower and a circumferential beam concentric to the said central tower defining the perimeter of said inner support structure, a first plurality of circumferential columns supporting said circumferential beam, a regular hexagonal structural network including a second plurality of columns disposed at apices of said hexagonal structural network, beams extending between and supported by said second plurality of columns, said diffusers bearing on said beams of said hexagonal structural network and thus supported by said first plurality of columns.

4,309,367

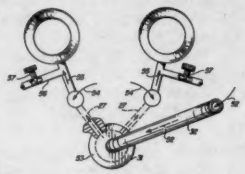
CARBURETOR EMPLOYING FUEL AIR MIXTURE MEANS OPERATIVE PRIOR TO CARBURETION

Fred Mineck, Phoenix, Ariz., assignor to Warren F. B. Lindsley, Phoenix, Ariz., a part interest

Filed Feb. 2, 1981, Ser. No. 230,891

Int. Cl.³ F02M *19/06*

U.S. Cl. 261—121 A **6 Claims**



1. An air fuel pre-mixing plug for mounting in a carburetor in lieu of its associated power valve comprising:

a pair of threadedly attachable parts,

one of said parts comprising a hollow male member for extending into an opening in the carburetor housing provided for the power valve,

the other of said parts comprising a female member threadedly engaging with said male member from within the carburetor housing and providing a passageway for air to pass from within the carburetor above its liquid fuel content to the hollow interior of said male member,

said parts when engaged sealing said opening, and

port means extending from the interior of said male member outwardly thereof for transmitting said air to venturi ports of the carburetor.

4,309,368

ELECTROSTATIC PINNING OF EXTRUDED THERMOPLASTIC FILM

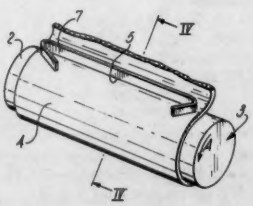
David J. Groves, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 102,351, Dec. 11, 1979, abandoned. This application Jul. 10, 1980, Ser. No. 168,416

Claims priority, application United Kingdom, Aug. 1, 1979, 26812/79

Int. Cl.³ B29D *7/02;* **H05B** *7/06*

U.S. Cl. 264—22 **14 Claims**



1. An apparatus for extruding and quenching a thermoplastics film, which comprises a movable casting surface arranged to receive a web of continuously-extruded thermoplastics film, an electrostatic pinning electrode supported transversely across and in spaced relation to the path of the molten film in the proximity of or prior to the region of first contact of the film with the casting surface, said electrostatic pinning electrode comprising a blade having a charge-emitting edge which

is non-linear and conforms during extrusion and quenching substantially at least to the transverse curvature of the marginal portion of the film adjacent each of the film edges in said proximity of or prior to the region of first contact of the film with the casting surface.

8. A process for extruding and quenching a thermoplastics film, which comprises continuously extruding a molten thermoplastics film onto a moving casting surface, depositing electrostatic charges upon the molten film by means of an electrostatic pinning electrode supported transversely across and in spaced relation to the molten film in the proximity of or prior to the region of first contact of the film with the casting surface, said electrostatic pinning electrode comprising a blade having a charge-emitting edge, which is non-linear and conforms during extrusion and quenching substantially at least to the transverse curvature of the marginal portion of the film adjacent each of the film edges in said proximity of or prior to the region of first contact of the film with the casting surface.

4,309,369

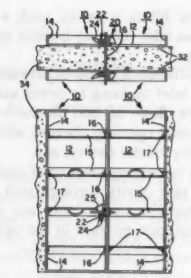
PROCESS AND APPARATUS FOR FORMING POURED CONCRETE WALLS

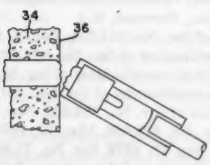
Richard M. Overton, Rte. #2, Box 209, Decatur, Mich. 49045

Filed Dec. 12, 1979, Ser. No. 102,896

Int. Cl.³ E04B *1/16;* **E04G** *11/08, 17/10;* **B25B** *9/00*

U.S. Cl. 264—31 **10 Claims**





1. In a process for forming a poured concrete wall and for breaking off an exposed end portion of a flat tie bar which is used, along with other like bars, to tie together form sections used to assemble a form for a poured concrete wall, which tie bar has a narrow transverse zone of weakness at the inner end of said exposed end portion, which zone of weakness is so located with reference to means for fastening said tie bar to said form sections that said zone of weakness coincides with the interface between said form and the concrete poured therein, whereby, when the form sections are removed from the set poured wall, said zone of weakness is coincident with the face of said wall, the improvement making it possible effectively to use tie bars without lateral reinforcement, which comprises: assembling said form with said tie bars holding the form sections in spaced-apart relation with the zone of weakness of each tie bar coincident with the inner surfaces of the form, pouring concrete into said form and allowing it to set up therein, removing said form sections leaving said end portions exposed, said end portions being without lateral reinforcement, grasping an exposed said end portion along the opposite narrow edges thereof with a force-applying means adapted to apply equal and opposite forces to the opposite narrow edges of said end portion in the plane of said tie bar, one of said forces being applied to one narrow edge of said end portion adjacent to said zone of weakness in the plane of said tie bar and the other being applied concomitantly in the opposite direction to the other narrow edge of the said end portion at a point remote from said zone of weakness, whereby, said exposed end portion is placed under a torque which, when sufficient force is applied, will cause the exposed end portion to be snapped off at the zone of weakness and at the face of the poured wall, all of said force being applied in the plane of said tie bar, whereby lateral bending does not occur, so that the tie bar does not need to be reinforced against lateral bending.

4,309,370

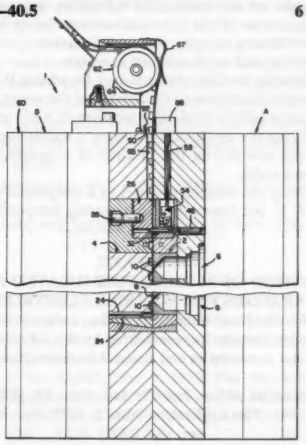
MOLDING PLASTIC BODIES ON CONTINUOUS STRIP

Ronald D. Sizemore, Germanton; John J. Tucci, Winston-Salem, and Albert D. Willette, Pfafftown, all of N.C., assignors to AMP Inc., Harrisburg, Pa.

Filed Oct. 3, 1979, Ser. No. 81,607

Int. Cl.³ B29F *1/00*

U.S. Cl. 264—40.5 **6 Claims**



1. A method for molding a series of molded products in continuous strip form, comprising the steps of:

molding a first molded product by a closed together pair of molding dies,

separating said dies,

ejecting said first molded product from at least one said die,

withdrawing all but a remainder portion of said first molded product from between said dies,

aligning said remainder portion in desired position between said dies,

detecting misalignment of said remainder portion,

preventing closure together of said dies when said misalignment is detected,

closing together said dies over said aligned remainder portion,

slackening said first molded product during closing together of said dies over said remainder portion, and

molding a second molded product by said closed together dies while joining the second molded product integrally to said remainder portion.

4,309,371

PREPARING REFRACTORY INSULATING PRODUCTS HAVING CONTROLLED POROSITY BY THE WET METHOD

Jean Daviot, Saint-Cheron, and Michel Marchais, Chatillon, both of France, assignors to Groupement pour les Activities Atomiques et Advancees, Le Plessis Robinson, France

Continuation of Ser. No. 873,753, Jan. 30, 1978, abandoned, which is a continuation-in-part of Ser. No. 679,585, Apr. 23, 1976, abandoned, which is a continuation of Ser. No. 473,979, May 28, 1974, abandoned. This application Jul. 9, 1980, Ser. No. 55,671

Claims priority, application France, May 30, 1973, 73.19773; Feb. 21, 1974, 74 05959

Int. Cl.[3] C04B 7/32

U.S. Cl. 264—43 7 Claims

1. A process for preparing, by the wet method, non-sintered refractory products of controlled porosity having resistance to molten aluminum, aluminum-base alloys, zinc and zinc-base alloys, comprising the following steps:

producing a solid mixture of a refractory aluminous cement and a ceramic mixture of:

a refractory aggregate selected from the group consisting of tabular alumina, corindon, stabilized zirconia and calcium zirconate, and

refractory ceramic polycrystalline fibers comprising at least 70% by weight alumina and at most 30% silica, the proportion of ceramic fibers being higher than 10% by weight of the amount of refractory aggregate, and the proportion of the ceramic mixture being between 10% and 70% by weight of the total mixture;

dispersing said solid mixture in water;

emulsifying the dispersed product by adding 0.5% to 3% by weight, in relation to the weight of the water, of a foaming agent which is stable in a medium of a pH greater than 3;

stabilizing the emulsion by adding a stabilizing agent;

molding and drying the product in a mould having lubricated walls;

and firing the molded product at a temperature higher than 150° C. but lower than its sintering temperature.

4,309,372

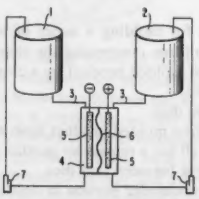
METHOD OF MAKING FORMULATED PLASTIC SEPARATORS FOR SOLUBLE ELECTRODE CELLS

Dean W. Sheibley, Sandusky, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation of Ser. No. 776,146, Mar. 10, 1977, Pat. No. 4,133,941. This application Nov. 3, 1977, Ser. No. 848,428

Int. Cl.[3] B29H 7/20

U.S. Cl. 264—45.3 4 Claims



1. A method of making a chloride anion transport membrane comprising preparing a mixture of a rubber, a solvent for said rubber and a powdered ion transport material, providing a layer of the mixture and removing the solvent to produce a dried sheet, said sheet comprising about 50 to 80 volume percent rubber and about 50 to 20 volume percent of said ion transport material, said ion transport material having particle sizes ranging from about 0.01 to 10 microns, said sheet having micropores less than 100 angstroms in diameter, said ion transport material being a salt of a chloride anion and a phosphonium, tertiary ammonium or quaternary ammonium cation.

4,309,373

PROCESS FOR FILLING CAVITIES WITH FLOWABLE REACTION MIXTURES

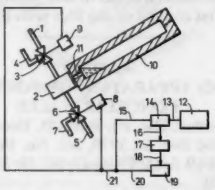
Ferdinand Althausen, Neunkirchen; Ferdinand Proksa, Leverkusen, and Ulrich Osinski, Koenigswinter, all of Fed. Rep. of Germany, assignors to Maschinenfabrik Hennecke GmbH, Leverkusen, Fed. Rep. of Germany

Filed Jan. 11, 1979, Ser. No. 2,776

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1978, 2803311

Int. Cl.[3] B29F 1/03

U.S. Cl. 264—51 1 Claim



1. A process for filling a cavity with a flowable reaction mixture through an inlet opening located at the bottom of the cavity comprising:

(a) injecting a sufficient amount of flowable reaction mixture through said inlet opening to cover said inlet opening,

(b) stopping the flow of said flowable reaction mixture through said inlet opening, thereby allowing air to escape through the top of the cavity, and

(c) injecting the remaining amount of said flowable reaction mixture into said cavity through said inlet opening at a speed such that the stream does not disrupt the surface level of the reaction mixture in the cavity.

4,309,374

METHOD OF COLORING AND MOLDING A SHAPED THERMOPLASTIC RESIN ARTICLE

Edward T. Pollard, Vermilion, Ohio, assignor to Plastic Molders Supply Co., Inc., Fanwood, N.J.

Continuation of Ser. No. 967,731, Dec. 8, 1978, abandoned, which is a continuation of Ser. No. 871,071, Jan. 19, 1978, abandoned, which is a continuation of Ser. No. 695,162, Jun. 11, 1976, which is a continuation of Ser. No. 494,340, Aug. 2, 1974, which is a division of Ser. No. 310,022, Nov. 28, 1978, which is a division of Ser. No. 129,968, Mar. 31, 1971. This application Sep. 10, 1979, Ser. No. 73,883

The portion of the term of this patent subsequent to Aug. 31, 1993, has been disclaimed.

Int. Cl.[3] B29F 1/00

U.S. Cl. 264—115 13 Claims

1. The process for dry coloring and molding a shaped article of a thermoplastic resin having highly developed color and hue and intense and lustrous color comprising:

(a) preparing a fluid admixture of a melted fatty acid amide and pigment particles, while avoiding agglomeration, said fatty acid amide being solid at room temperature, the amine radical in the fatty acid amide containing 0 to 36 carbon atoms, each fatty acid radical in the fatty acid amide containing 1 to 36 carbon atoms, and said fatty acid amide can be substituted by hydroxyl;

(b) cooling the admixture until it is in a solidified state, the pigment particles being substantially encapsulated by the fatty acid amide, and said admixture being in dry form;

(c) particulating the solidified admixture, particles of said solidified admixture being obtained;

(d) removing the fines portion of said particles of said partic

ulated solidified admixture from said particles of said particulated solidified admixture;

(e) admixing said particles of said particulated solidified admixture in dry form with a particulated thermoplastic resin; and

(f) molding said admixture of said particles of said particulated solidified admixture and said particulate thermoplastic resin, whereby said colored, molded, shaped article results,

said admixing step and molding step do not utilize any solvent.

4,309,375

METHOD AND APPARATUS FOR CONTINUOUS PRODUCTION OF REINFORCED PROFILE BELTS

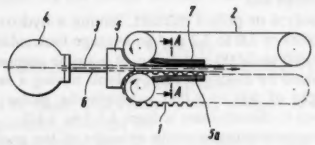
Klaus Rabenecker, Nordenham, Fed. Rep. of Germany, assignor to Norddeutsche Seekabelwerke Aktiengesellschaft, Nordenham, Fed. Rep. of Germany

Filed Jun. 13, 1980, Ser. No. 159,099

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1979, 2924357

Int. Cl.³ B29D *29/00*; B29H *7/22*

U.S. Cl. 264—167 **8 Claims**



1. A method for continuously producing reinforced profile belts of extruded rubber or plastic material provided with a stretch resistant insert strip, wherein an extruded rubber or plastic material stream passes between two circulating endless loop halves of a divided former which converge along a portion of their lengths to define a closed former segment, comprising the steps of:

(a) drawing the insert strip centrally through an extruder outlet to encase it on all sides with a coating of rubber or plastic material, and

(b) pulling the coated strip through a straight, closed former segment under tension allowing the coated strip to cool to centrally dispose the strip in a neutral zone of the finished belt and cover the strip on all sides by the rubber or plastic material.

3. An apparatus for producing toothed belts having a stretch resistant reinforcing insert strip encased in an extrudable elastic material such as rubber or plastic, comprising:

(a) an extruder having an outlet nozzle through which an insert strip may be drawn to encase it in elastic material, and

(b) a former disposed downstream of the extruder and including:

(1) a pair of endless driven bands each supported around opposing spaced rollers and defining a straight, elongated mold chamber between two adjacent runs of said bands, one of said bands having a toothed outer surface,

(2) an inlet funnel disposed at a nip zone between two of said rollers for feeding the encased insert strip into the former, and

(3) a pair of converging guide means disposed behind and in engagement with said two adjacent band runs for decreasing the cross-sectional area of the mold chamber in a downstream direction to compensate for shrinkage as the elastic material cools during its passage through the chamber.

4,309,376

METHOD FOR PRODUCING A SHOE SOLE

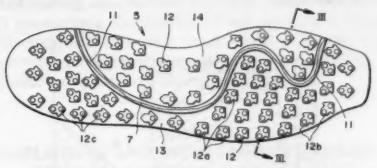
Yoshio Ueno, Kobe, and Masanobu Inohara, Akashi, both of Japan, assignors to Asics Corporation, Kobe, Japan

Division of Ser. No. 913,757, Jun. 8, 1978. This application Jul. 5, 1979, Ser. No. 54,853

Claims priority, application Japan, Dec. 13, 1977, 52-49299; Jan. 25, 1978, 53-6519

Int. Cl.³ B29H *7/08*; B29C *1/00*

U.S. Cl. 264—241 **1 Claim**



1. A method for producing a shoe sole having a ground-contacting surface having at least one strip of a protuberant wall or ridge which demarcates said ground-contacting surface into at least two sections, said ground-contacting surface also having a plurality of creeper protuberances, the material of one section of said adjoining two sections being different from the material of the other section, comprising the steps of:

(a) charging materials into the cavity of the outer mold of a sole forming mold, said cavity including in the bottom surface at least one groove for forming at least one strip of protuberant wall or ridge and a plurality of recessions for forming said creeper protuberances, said materials being previously shaped into configurations similar to said sections of shoe sole to fuse said materials together in said groove of cavity,

(b) closing said cavity with a press plate of the sole forming mold, and

(c) compressing and heating said cavity to form a shoe sole.

4,309,377

POLYMER ALLOY BOWLING BALL

Charles M. Miller, Jr., and Samuel J. Orlando, both of San Antonio, Tex., assignors to Columbia Industries, Inc., San Antonio, Tex.

Division of Ser. No. 92,981, Nov. 9, 1979, Pat. No. 4,253,665. This application Nov. 17, 1980, Ser. No. 207,385

Int. Cl.³ B29D *31/00*; A63B *37/12, 37/14*

U.S. Cl. 264—294 **14 Claims**

1. A method of making a bowling ball having a film exuded on the surface of said bowling ball from within said bowling ball comprising:

adding a plasticizer, at least one liquid phase thermosetting resin and at least one catalyst to a container, the amount and type of said plasticizer being sufficient to cause a viscous film to be deposited upon the surface of said bowling ball from within said bowling ball, the amount and type of said liquid phase thermosetting resin being sufficient to produce a bowling ball containing said plasticizer having sufficient hardness and toughness, and the amount and type of said catalyst being sufficient to substantially cure said thermosetting resin under proper reaction conditions;

mixing said plasticizer and said liquid phase thermosetting resin and said catalyst to form a substantially uniform mixture;

placing said mixture within a mold at a temperature and for a time sufficient to cure said thermosetting resin to a solid phase substantially incompatible with and substantially unreactive with said plasticizer and allowing the plasticizer to exude as a film on the surface of said bowling ball.

4,309,378

PROCESS FOR THE PRODUCTION OF PNEUMATIC TIRES HAVING PARTICULARLY HIGH DYNAMIC STRENGTH

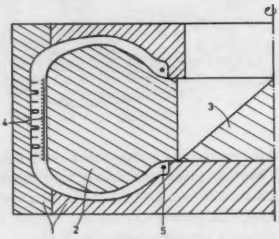
Otto Ganster, and Jürgen Schwindt, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 14, 1980, Ser. No. 178,230

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1979, 2933165

Int. Cl.³ C08G *18/32, 18/16;* B28B *1/20*

U.S. Cl. 264—311 **12 Claims**



1. A process for the production of pneumatic tires having particularly high dynamic strength and low plastic deformability comprising casting, or centrifugally casting, the following liquid reaction system whose rapid hardening requires temperatures of at most 85° C.:

(A) prepolymers or semiprepolymers of

(i) an isocyanate selected from the group consisting of:

(a) hexamethylene-1,6-diisocyanate,

(b) 2,4- or 2,6-tolylene diisocyanate and mixtures thereof,

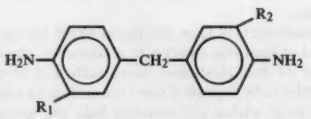
(c) 4,4'- or 2,4'-diisocyanato-diphenylmethane and mixtures thereof, and

(d) diisocyanato-diphenylmethane C_1–C_4 alkylated from one to four times in the ortho position to the NCO-groups and

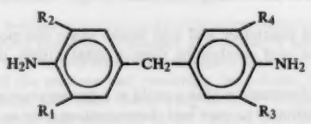
(ii) a polyol or polyol mixture, having a hydroxyl functionality of 2.0 to 2.2 and an average molecular weight of 1,000 to 3,000 consisting of a single component or obtained by mixing several polyols having a molecular weight of 500 to 4,000,

wherein the molar ratio of polyol to diisocyanate is from 1:1.5 to 1:4.0;

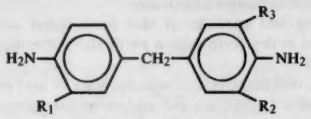
(B) aromatic diamine chain extenders selected from the group consisting of:


(i)

wherein R_1 and R_2, which may be the same or different, represent C_2H_5—, C_3H_7— and C_4H_9—;


(ii)

wherein R_1, R_2, R_3 and R_4, which may be the same or different, represent C_2H_5— and C_3H_7—; and


(iii)

wherein R_1, R_2 and R_3, which may be the same or different, represent C_2H_5—, C_3H_7— and C_4H_9—

(C) catalyst; and

(D) auxiliaries.

11. A process for the production of penumatic tires having particularly high dynamic strength and low plastic deformability comprising casting, or centrifugally casting, the following liquid reaction system whose rapid hardening requires temperatures of at most 85° C.:

(A) prepolymers or semiprepolymers of

(i) an isocyanate selected from the group consisting of:

(a) hexamethylene-1,6-diisocyanate,

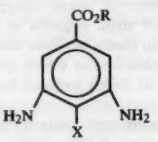
(b) 2,4- or 2,6-tolylene diisocyanate and mixtures thereof,

(c) 4,4'- or 2,4'-diisocyanato-diphenylmethane and mixtures thereof, and

(d) diisocyanato-diphenylmethane C_1–C_4 alkylated from one to four times in ortho position to the NCO-groups and

(ii) a polyol or polyol mixture, having a hydroxyl functionality of 2.0 to 2.2 and an average molecular weight of 1,000 to 3,000 consisting of a single component or obtained by mixing several polyols having a molecular weight of 500 to 4,000, wherein the molar ratio of polyol to diisocyanate is from 1:1.5 to 1:4.0;

(B) an aromatic diamine chain extender of the general formula:



wherein

R is C_nH_{2n+1},

n is an integer of from 4 to 10, and

X is CH_3— or Cl;

(C) catalyst; and

(D) auxiliaries.

4,309,379

METHOD AND APPARATUS FOR RUNNERLESS INJECTION-COMPRESSION MOLDING THERMOSETTING MATERIALS

W. Andrew Dannels, Grand Island, N.Y., and Robert W. Bainbridge, Gainesville, Ga., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 972,189, Dec. 21, 1978, Pat. No. 4,238,181. This application Jun. 30, 1980, Ser. No. 164,412

Int. Cl.³ B29F *1/08*

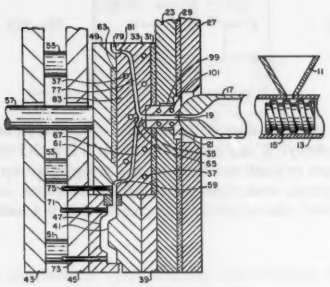
U.S. Cl. 264—328.2 **5 Claims**

1. A method of injection-compression molding an article from thermosetting material comprising the steps of:

(a) plasticizing a predetermined amount of thermosetting molding material,

(b) passing said amount of plasticized molding material through a temperature-controlled zone maintained at a temperature sufficiently low to prevent substantial curing of the molding material and sufficiently high to maintain the molding material in a plasticized condition,

(c) dividing said plasticized molding material within said temperature-controlled zone into two or more streams,
(d) injecting said streams into two or more partially open mold cavities to partially fill the space between the mold faces, said mold cavities being maintained at a temperature sufficient to cure said molding material,

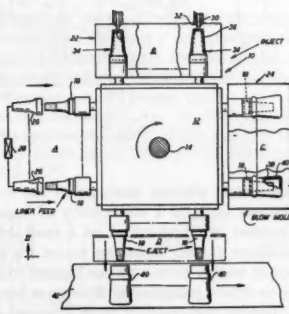


(e) completely closing said mold faces to compress and cure the molding material in the internal configuration of said mold but not in said temperature controlled zone, and
(f) removing the cured, molded article from the mold.

4,309,380
PROCESS FOR MAKING MULTILAYERED CONTAINERS

Donald G. Sauer, Harwinton, Conn., assignor to National Can Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 608,177, Aug. 27, 1975, abandoned, which is a division of Ser. No. 448,191, Mar. 5, 1974, abandoned. This application Jul. 19, 1979, Ser. No. 59,027
Int. Cl.³ B29C *17/07*
U.S. Cl. 264—511 **15 Claims**

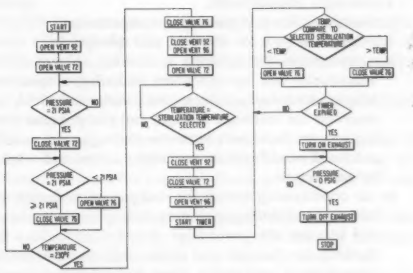


1. A process for forming a hollow multilayered thermoplastic article, comprising the steps of:
(A) placing a previously formed liner comprised of a thermoplastic material over a blow slot equipped core rod having liner engaging exterior surface portions formed at least in part of a porous material having a porosity of from about ⅛ to 5 microns, said liner having an internal surface configuration which is generally conformable with said exterior surface portions, said exterior surface portions being removable from said thermoplastic material,
(B) reducing the pressure within said liner equipped core rod below ambient at said porous portions and optionally at said blow slot, the interrelationship between said liner and said surface portions occupied by said porous portions and said blow slot if open being such that an intimate substantially gas free contact between said liner and said adjacent exterior surface portions is achieved,
(C) maintaining a reduced pressure within said core rod while providing an injection mold adjacent said liner on said core rod,
(D) injecting an injectable heated thermoplastic resin into said injection mold over said liner to form a composite preform with said liner while maintaining a reduced pressure within said core rod,
(E) removing said preform on said core rod from said cavity,
(F) providing a blow mold adjacent said preform while maintaining said preform in a blow-moldable state,
(G) pressurizing the interior of said preform substantially through said blow slot to an extent sufficient to make portions of said preform expand against said blow mold, thereby to produce a blown container.

4,309,381
ESTABLISHING AND ASCERTAINING DESIRED AIR REMOVAL IN STEAM STERILIZATION

Robert E. Chamberlain, Erie, and Thomas G. Cook, Fairview, both of Pa., assignors to American Sterilizer Company, Erie, Pa.

Filed Nov. 6, 1979, Ser. No. 91,710
Int. Cl.³ A61L *2/06*; G05B *1/00*
U.S. Cl. 422—3 **10 Claims**



1. Process for steam sterilization of goods utilizing steam flow through a chamber to facilitate removal of air and providing for determination of effective air removal by correlating measured chamber conditions with steam-table established data for the dependent variables of pressure and temperature for saturated steam, comprising the steps of
providing a chamber capable of operating at pressures above atmospheric,
injecting steam into the chamber while providing for removal of chamber atmosphere through a chamber vent opening such that chamber pressure increases above atmospheric pressure, such chamber vent opening being held constant in a substantially wide open configuration during removal of chamber atmosphere,
providing for use of predetermined steam-table data for the dependent variables of pressure and temperature for saturated steam,
controlling the value within the chamber of one of such dependent variables while measuring at least intermittently the value within the chamber of the remaining of such dependent variables during an air removal load conditioning phase prior to reaching desired steam sterilization exposure conditions,
such control of the value within the chamber of the one dependent variable and such measurement of the remaining dependent variable being carried out until respective values of each within the chamber substantially correspond to the predetermined steam-table values for each

thus completing air removal and ensuring that substantially all air has been removed, then

rapidly pressurizing the chamber for steam sterilization exposure and closing such constant opening chamber vent, maintaining the constant opening chamber vent closed until completion of desired sterilization, and upon completion of desired sterilization exposure,

exhausting the chamber to return chamber pressure to substantially atmospheric pressure.

4,309,382

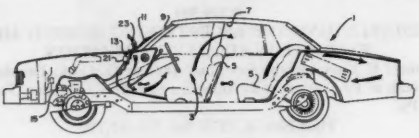
MOTOR VEHICLE DEODORIZING METHOD

Richard A. Miller, St. Louis, Mo., assignor to Stewart Sanitary Supply, Inc., St. Louis, Mo.

Filed Mar. 27, 1980, Ser. No. 134,530

Int. Cl.³ A61L *9/04, 9/02, 9/14*

U.S. Cl. 422—4 **3 Claims**



1. A method for deodorizing a motor vehicle, said motor vehicle including:

a passenger compartment,

a windshield for said passenger compartment,

windshield wipers for cleaning said windshield,

a spray system for spraying a cleaning solvent onto said windshield, said spray system including a spray nozzle adapted to spray a solvent onto said windshield, a fluid reservoir for holding a solvent, and pump means for forcing solvent from said reservoir through said nozzle and onto said windshield for spreading across said windshield by said wipers,

an air conditioning system for said passenger compartment, said air conditioning system including an air intake generally adjacent the lower edge of said windshield, a fan for drawing air through said intake and into said passenger compartment, and outlet means for permitting a substantial quantity of air to escape said passenger compartment and said vehicle,

said method comprising a step of adding to said fluid reservoir and operative quantity of a solvent-evaporation type of deodorant and a step of activating said air conditioning system and said windshield spray system to draw sufficient of said solvent-evaporation deodorant into said passenger compartment to evaporate odorant particles in said passenger compartment and evacuate said particles through said outlet, said solvent-evaporation type of deodorant comprising as its primary active ingredient a three to five carbon alcohol and further comprising a masking agent for masking objectionable odors present in said passenger compartment, said reservoir also containing methanol and a detergent.

4,309,383

DI-QUATERNARY AMMONIUM SALTS OF α-1,4-THIAZINE ALKANEPHOSPHONIC ACIDS AS CORROSION INHIBITORS

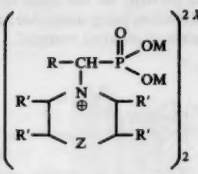
Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 932,259, Aug. 9, 1978, Pat. No. 4,264,768. This application Oct. 14, 1980, Ser. No. 196,969

Int. Cl.³ C23F *11/04, 11/16*

U.S. Cl. 422—12 **4 Claims**

1. A process of inhibiting corrosion of metals exposed to a corrosive liquid medium which comprises adding to said corrosive liquid medium an effective amount of a compund having the formula



where R is alkyl, alkenyl, cycloalkyl, aryl, alkaryl, aralkyl or hydroxyphenyl, R′ is hydrogen or alkyl, Z is S, SO or SO_2, M is hydrogen or a salt moiety, is a bridging group selected from alkylene, aralkylene, alkaralkylene, alkylene- or polyalkylene ether, alkenylene or alkinylene and X is a halide.

4,309,384

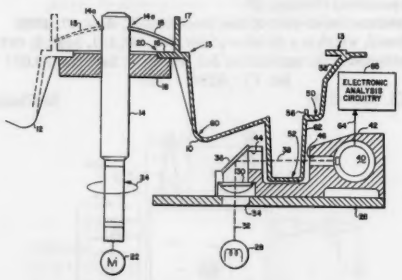
CHEMICAL ANALYSIS CUVETTE

Ernest Trod, 2376 Roosevelt Cir., Santa Clara, Calif. 95051

Filed Apr. 4, 1980, Ser. No. 137,503

Int. Cl.³ G01N *35/02, 21/07*

U.S. Cl. 422—64 **7 Claims**



1. In a photometric solution analyzer of the rotary type wherein a carousel includes a multiplicity of improved cuvettes, said carousel being journaled on a shaft driven by a motor, said analyzer further including means for permitting transfer of radiant energy from a source thereof to a detector therefor along an optical path passing through at least a part of each of said cuvettes, said cuvettes being disposed about said carousel for receiving and mixing a reagent and a sample, each improved cuvette comprising:

a sample holding means being disposed in each cuvette for receiving the sample, said means being located radially outward from the center of said carousel; and,

a chamber being disposed for receiving the reagent, said chamber being located below said sample holding means and radially inward of said sample holding means, said chamber further being disposed in the optical path so that radiant energy is passed therethrough, whereby rotation of said carousel at a first speed allows the radiant energy to pass through the reagent prior to mixing with the sample, and rotation at a second speed causes the reagent in each cuvette to flow towards said sample holding means to effect mixture of the reagent with the sample for analysis.

4,309,385

APPARATUS FOR MEASURING VOLATILE HYDRIDES

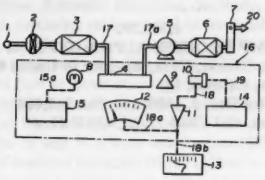
Hikaru Harada, Kamakura; Teruo Akiyama, and Tuneo Hiyama, both of Tokyo, all of Japan, assignors to Nippon Sanso K.K., Tokyo, Japan

Filed Jan. 4, 1980, Ser. No. 109,329

Claims priority, application Japan, Jan. 26, 1979, 54-8027; Jan. 26, 1979, 54-8262

Int. Cl.³ G01N *21/00*

U.S. Cl. 422—83 19 Claims



1. An apparatus for measuring the concentration of volatile hydrides in a gas sample which comprises:

a reactor containing mercuric oxide wherein the volatile hydrides react stoichiometrically with said mercuric oxide to form mercury atom gas and reacted hydrides,

means for transferring the gas sample to said reactor,

means for conducting said mercury atom gas and said reacted hydrides to a detection means,

said detection means comprising an ultraviolet radiation source, an ultraviolet absorption cell for absorbing ultraviolet radiation, and a light detector for detecting ultraviolet light transmitted through said cell, said transmitted light being directly related to the concentration of said mercury atom gas, and said detection means being operative at room temperature, and

means for indicating and recording the concentration of said volatile hydrides in the gas sample.

4,309,386

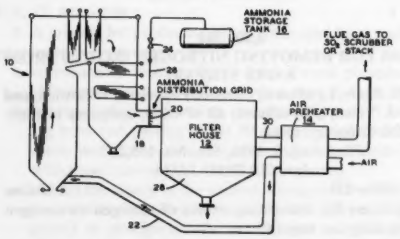
FILTER HOUSE HAVING CATALYTIC FILTER BAGS FOR SIMULTANEOUSLY REMOVING NO_x AND PARTICULATE MATTER FROM A GAS STREAM

Edward A. Pirsh, Akron, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Division of Ser. No. 34,518, Apr. 30, 1979, Pat. No. 4,220,633. This application Mar. 3, 1980, Ser. No. 126,639

Int. Cl.³ B01D *29/10;* B01J *15/00;* F01N *3/02, 3/28*

U.S. Cl. 422—177 3 Claims



1. An improved filter house for simultaneously cleansing a gas stream of NOx and entrained particulate matter, the filter house including a housing, a gas-flow inlet attached to the housing, a gas-flow outlet attached to the housing, a hopper in registry with the housing and a plurality of fibrous fabric filter bags disposed within the housing and in gas flow communication with the gas stream, the improvement comprising the filter bags displaying an integral catalyst, selected from the group consisting of a noble metal, zirconium promoted lanthanum cuprate, an iron base ammonia decomposition catalyst and the oxides of vanadium, cobalt, molybdenum, manganese, tungsten and iron-chromium, to the gas stream to effect NOx removal from the stream.

4,309,387

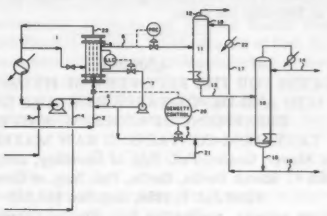
OLEFIN DIMERIZATION

Cecil O. Carter, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 933,345, Aug. 14, 1978, Pat. No. 4,242,531. This application Jul. 2, 1980, Ser. No. 165,464

Int. Cl.³ F28D *7/00*

U.S. Cl. 422—201 5 Claims



1. An apparatus for dimerizing an olefin comprising:

a pump,

a conduit loop connecting the outlet of said pump with the inlet of said pump,

inlet feed means to feed an olefin-containing material and a solvent therefor into said loop,

catalyst feed means to feed a catalyst selective to dimerization into said loop,

a heat exchanger located within said loop downstream of said inlet and catalyst feed means for indirect heat exchange between the materials flowing in said conduit loop and flashed materials,

a flash conduit connecting the conduit loop and the shell side of said heat exchanger permitting flashing of materials flowing from said conduit loop into said shell side,

a liquid removal conduit connected to said shell side, and

a vapor removal conduit connected to said shell side.

4,309,388

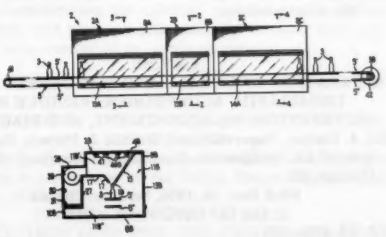
OZONE STERILIZING APPARATUS

Robert I. Tenney, 32 Coldstream Cir., Deerfield, Ill. 60015, and William R. Eckstrom, 14709 Kenwood, Dolton, Ill. 60419

Filed Feb. 4, 1980, Ser. No. 118,655

Int. Cl.³ A61L *2/10, 2/20*

U.S. Cl. 422—304 12 Claims



1. A continuous sterilizing apparatus comprising an enclosure surrounding the top, bottom and sides of a central sterilizing enclosure space and adjacent inlet and outlet enclosure spaces opening horizontally to the exterior of the enclosure at

the opposite ends thereof; a conveyor for carrying open-topped containers to be sterilized horizontally through said inlet, sterilizing and outlet enclosure spaces of the enclosure; said sterilizing enclosure space being divided by partition wall means into upper and lower compartments, said conveyor passing through said lower compartment; passageway means between said upper and lower compartment for directing ozone-containing air in said upper compartment downward into said lower compartment immediately above the path of travel of the open tops of the containers passing through said lower compartment; ozone-generating means for producing ozone in said sterilizing enclosure space; and blower means for recirculating ozone-containing air between said compartments in a direction which directs the same downward through said passageway means into the lower compartment so that ozone in the upper compartment is directed under the force of said blower means into the openings at the tops of the containers as well as between the same.

4,309,389

PROCESS FOR THE RECOVERY OF HYDROFLUORIC ACID AND DEPOSITABLE RESIDUES DURING TREATMENT OF NIOBIUM- AND/OR TANTALUM-CONTAINING RAW MATERIALS

Horst Meyer, Goslar, Fed. Rep. of Germany, assignor to Hermann C. Starck Berlin, Berlin, Fed. Rep. of Germany

Filed Jul. 1, 1980, Ser. No. 164,865

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1979, 2927835

Int. Cl.³ C01G *33/00, 35/00*

U.S. Cl. 423—63 **6 Claims**

1. In a process for treating tantalum- and/or niobium-containing raw materials by dissolving them in hydrofluoric acid and sulfuric acid mixtures, separating the niobium and tantalum elements by liquid-liquid-extraction, and subsequently re-extracting said elements as complex fluoroacids from the organic phase in aqueous solutions, the improvement which comprises

(a) decomposing said obtained aqueous solutions containing fluoroacid complexes of niobium and/or tantalum and small amounts of free hydrofluoric acid by pyrohydrolysis within a temperature range of from 60° to 600° C., calcinating within a temperature range of from 600° to 1500° C., converting the complex fluoroacids of niobium and/or tantalum to pure oxides of niobium and/or tantalum, and recovering the hydrofluoric acid separated during pyrohydrolysis in its pure reusable form with a hydrogen fluoride content of from 1 to 80 percent by weight, by condensation or scrubbing of the exhaust gas, and

(b) decomposing by pyrohydrolysis extracted niobium- and/or tantalum-free raffinate solution comprising dissolved metalloids as well as still free sulfuric acid and hydrofluoric acid in the mixture, and calcinating, recovering the hydrofluoric acid and the sulfuric acid as a condensate in a reusable mixture, and recovering the metalloids as oxides not comprising water-soluble constituents as deposable waste products.

4,309,390

SEPARATION OF COBALT AND MANGANESE FROM TRIMELLITIC ACID PROCESS RESIDUE BY EXTRACTION, PH ADJUSTMENT, AND MAGNET

Jon J. Harper, Naperville, and Stephen J. Pietsch, Oak Park, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Dec. 19, 1980, Ser. No. 218,060

Int. Cl.³ C01G *51/08, 45/00*

U.S. Cl. 423—150 **3 Claims**

1. A method of recovery of cobalt and manganese from residue of trimellitic acid manufacture and separation of recovered cobalt from recovered manganese which comprises combining water with said residue while hot at a weight ratio of water to residue of from 0.5:1 up to 6:1 at a final temperature of from 75° C. up to 125° C., at least adjusting the pH of the resulting mixture to pH6, adding powdered manganese to the pH-adjusted solution in an amount of at least 1.0 chemical equivalent of the dissolved cobalt for its precipitation as metallic cobalt, and subjecting the resulting suspension to a magnetic separator for the recovery of metallic cobalt and the separation of a cobalt-free solution of increased manganese ion concentration.

4,309,391

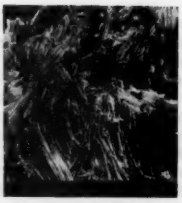
LUMP PROCESS ALPHA GYPSUM

Eugene O'Neill, Okeene, Okla., assignor to United States Gypsum Company, Chicago, Ill.

Filed Dec. 3, 1980, Ser. No. 212,464

Int. Cl.³ C04B *11/02;* C01F *11/46*

U.S. Cl. 423—172 **6 Claims**



1. In a process for the production of alpha calcium sulfate hemihydrate crystals of the type wherein lump gypsum particles of at least about ¼ inch size are calcined at steam pressures of 13 to 60 psi gauge in a state of quiescence and with an at least first lower pressure cycle and a second higher pressure cycle, dried and ground to obtain calcium sulfate hemihydrate having a low normal consistency, the improvement comprising:

heating under the lower pressure cycle without a crystal habit modifier to convert at least a substantial but minor part of the gypsum to hemihydrate;

intermediate the low pressure and high pressure cycles adding an aqueous solution of crystal-habit-modifier; and

continuing calcination under steam pressure until substantially all of the gypsum particles are converted to hemihydrate crystals.

4,309,392

PROCESS FOR REMOVING NITROGEN OXIDES FROM A GAS STREAM

Wilfrid G. Shaw, Lyndhurst; Christos Paparizos, Willowick, and Louis J. Velenyi, Lyndhurst, all of Ohio, assignors to Standard Oil Company, Ohio

Filed Aug. 5, 1980, Ser. No. 175,237

Int. Cl.³ B01D *53/36*

U.S. Cl. 423—239 **6 Claims**

1. A process for converting oxides of nitrogen to nitrogen gas comprising the step of:

passing the oxide of nitrogen over a reactant carbon fiber material at a temperature of from about 450° C. to about 750° C.;

said reactant carbon fiber material comprising a reduced metal, selected from the group consisting of iron, nickel and cobalt, and carbon fibers deposited thereon wherein the carbon content of said fibers is from about five to about 98 percent by weight based upon the weight of said reactant carbon fiber material.

4,309,393

FLUIDIZED BED SULFUR DIOXIDE REMOVAL

Xuan T. Nguyen, Roxboro, Canada, assignor to Domtar Inc., Montreal, Canada

Filed Oct. 14, 1980, Ser. No. 196,766
Int. Cl.[3] C10B *17/00*
U.S. Cl. 423—244 4 Claims

1. Method of capturing sulfur released in the fluid bed oxidation of sulfur containing fuels comprising injecting a suitable calcinable material selected from one or more of group consisting of limestone, dolomitic limestone, dolomite, and magnesite into said bed, calcining said material to form calcined material in said bed, combining a portion of said calcined material generated in said bed with SO_2 formed by oxidation of the sulfur in said fuel to generate a combined product, removing said combined product together with unreacted calcined material from said fluidized bed, conducting flue gases containing the remainder of said SO_2 from said fluidized bed unit, slaking said calcined material extracted from said bed in water, to form a slurry contacting said flue gases with said slurry of the slaked material to react SO_2 with said slaked material to form a second combined product and separating said second combined product from said flue gas.

4,309,394

METHOD OF PREPARING ULTRAPHOSPHORIC ACID

Robert B. Hudson, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Apr. 9, 1980, Ser. No. 138,616
Int. Cl.[3] C01B *25/16*
U.S. Cl. 423—317 14 Claims

1. A process for preparing ultraphosphoric acid which comprises:

(a) bringing together in a reaction zone elemental phosphorus, a sufficient amount of oxygen in a free-oxygen containing gas to form phosphorus pentoxide, and sufficient water to form ultraphosphoric acid, the mole ratio of water to phosphorus pentoxide being less than 1:1, to form a product stream;

(b) removing heat from the product stream to cool the product stream below the dew point of ultraphosphoric acid; and

(c) collecting the ultraphosphoric acid.

4,309,395

PHOSPHORIC ACID PRODUCTION

Douglas O. Hauge, 930 Acalanes Rd., Lafayette, Calif. 94549

Filed Apr. 21, 1980, Ser. No. 142,424
Int. Cl.[3] C01B *25/16*
U.S. Cl. 423—320 4 Claims

1. A process for producing phosphoric acid from rock phosphate which comprises:

a. continuously feeding finely divided rock phosphate and phosphoric acid into a first mixing zone to form a slurry;

b. continuously withdrawing said slurry from said first mixing zone and passing about 90 percent of the withdrawn slurry into a second mixing zone and the remainder of the withdrawn slurry into a third mixing zone;

c. mixing the slurry in the second mixing zone with concentrated sulfuric acid in a stoichiometric excess of that required to precipitate the calcium ion contained in the slurry;

d. withdrawing slurry from the second mixing zone and passing about 80–90 percent of the withdrawn slurry into the first mixing zone and the remainder of the withdrawn slurry into the third mixing zone;

e. continuously withdrawing slurry from the third mixing zone and filtering it in a filtering zone to separate a filter cake and filtrate;

f. withdrawing a portion of the filtrate as product;

g. washing the filter cake with water and adding the washings to the remainder of the filtrate and returning the resultant mixture to the first mixing zone;

h. periodically determining the calcium ion concentration in the slurry of the first mixing zone and sulfate ion concentration in the second mixing zone;

i. adjusting the quantity of slurry returned from the second mixing zone to the first mixing zone to maintain the calcium ion concentration in the first mixing zone in the range of approximately 1.0% to 2.5% by weight; and

j. adjusting the rate of sulfuric acid addition to the second mixing zone to maintain sulfate ion concentration in the slurry in said mixing zone in the range of approximately 2.0% to 4% by weight.

4,309,396

PROCESS FOR THE ABSORPTION OF NITROUS GASES

Peter Herbrechtsmeier, Hofheim am Taunus; Rudolf Steiner, Sulzbach, and Herbert Vilcsek, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 26, 1980, Ser. No. 191,273
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1979, 2939674
Int. Cl.[3] C01B *21/40*
U.S. Cl. 423—393 7 Claims

1. A process for removing nitric oxides from gas mixtures by absorption which comprises the steps of:

continuously passing a gas mixture containing NO_2, NO and O_2 in an upward direction at a superficial velocity of 10 to 30 cm/second, through 1 to 6 zones of each of 2 to 5 bubble columns in series;

introducing an aqueous absorbent in a bottom end of each bubble column and removing said absorbent at a top end of each bubble column; and

dispersing large bubbles formed in each zone as the gas mixture rises in the aqueous absorbent into smaller bubbles.

4,309,397

PRODUCTION OF CARBON MONOXIDE FROM CARBON

William G. Billings, and James Scinta, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 28, 1980, Ser. No. 172,784
Int. Cl.[3] C10J *3/06, 3/54*
U.S. Cl. 423—415 A 10 Claims

1. A process of producing carbon monoxide comprising heating a carbon-containing feed comprising finely divided particles formed by admixing finely divided particles of solid carbon with a slurry of zinc nitrate, removing enough of the liquid of said slurry to give a solid product, calcining said solid product at a temperature no greater than about 550° C. to convert a substantial portion of the zinc material to zinc oxide, and then comminuting the calcined material to the desired particle size, said heating being sufficient to cause carbon in said feed to be converted to carbon monoxide.

4,309,398

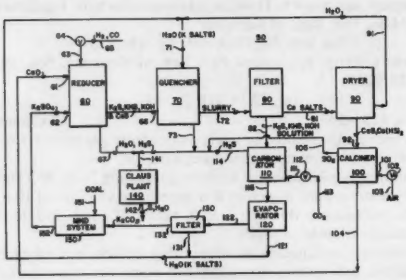
CONVERSION OF ALKALI METAL SULFATE TO THE CARBONATE

Atul C. Sheth, Woodridge, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 1, 1979, Ser. No. 80,726
Int. Cl.[3] H02K *44/00;* C01D *7/00;* C01B *17/16, 17/00*
U.S. Cl. 423—428 10 Claims

7. A process for converting potassium sulfate to potassium carbonate comprising passing a mixture of potassium sulfate and calcium oxide to a reducing station and there reacting said mixture for a time not to exceed about one hour to convert not less than about 80% of the sulfate potassium sulfide, potassium

bisulfide, or potassium hydroxide at a temperature of about 750° C. with a gaseous mixture having a minor amount of up to about 20 volume percent reductants selected from the group consisting of hydrogen, carbon monoxide and mixtures thereof in an inert diluent wherein the calcium oxide is present in an amount not greater than about 20 percent by weight of the potassium sulfate to produce a liquid mixture of said potassium sulfide, potassium bisulfide or potassium hydroxide and calcium sulfide and a gaseous mixture of steam and hydrogen sulfide; passing the liquid mixture to a quenching station and there adding water to produce an aqueous slurry of soluble potassium salts and insoluble calcium salts and a gaseous mixture of steam and hydrogen sulfide; passing the slurry to a filtering station and there separating the insoluble calcium salts from the aqueous solution of soluble potassium salts; passing the calcium salts to a drying station operated at a temperature of about 100° C. to produce calcium sulfide, calcium bisulfide



and steam; passing the calcium sulfide and calcium bisulfide to a calcining station operated at a temperature of between about 800° C. and 1000° C. and introducing air thereto to produce calcium oxide for recycle to the reducing station and sulfur dioxide; passing the soluble potassium salts from the filtering station to a carbonating station operated at a temperature of about 80° C. and introducing carbon dioxide gas to the aqueous solution of potassium salts to produce potassium carbonate and hydrogen sulfide; passing the potassium carbonate solution to an evaporating station to concentrate the potassium carbonate to precipitate potassium carbonate from solution and to produce steam containing potassium salts recycled to the quenching station; passing the liquid phase containing precipitated potassium carbonate from the evaporating station to a filtering station to separate solid potassium carbonate therefrom and recycling the concentrated potassium-containing filtrate to the quenching station.

4,309,399

UPGRADING OF THERMAL BLACK REJECT MATERIAL

Trevor G. Lamond, Quincy, Ill., assignor to J. M. Huber Corporation, Locust, N.J.

Filed Sep. 15, 1980, Ser. No. 186,984

Int. Cl.³ C01B *31/02*; C09C *1/48*

U.S. Cl. 423—450 **3 Claims**

1. In the process comprising producing a carbon black by thermal decomposition of a hydrocarbon feedstock, pelletizing said carbon black, removing over-sized material from the carbon black by a first screening means, and sucking the over-sized material into a bag filter where it is impinged on a plate, the improvement which comprises:

(a) removing material which has been reduced in size by being sucked into the bag filter and impinged on the plate from the over-sized material by a second screening means; and

(b) adding the material of reduced size to the carbon black.

4,309,400

STARTUP PROCEDURE

Lawrence K. Murray, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 19, 1980, Ser. No. 161,180

Int. Cl.³ C01B *31/02*; C09C *1/48*

U.S. Cl. 423—450 **8 Claims**

1. A process for startup of a carbon black plant comprising

producing hot combustion gases low in free oxygen;

bringing said hot combustion gases into heat exchange relationship with a fluid to produce a high pressure saturated stream which is flashed to produce superheated steam and a cooled combustion gas stream; and

using said superheated steam stream to warm bag filters in said carbon black plant.

4,309,401

PROCESS FOR THE MANUFACTURE OF SULPHUR WHICH CAN BE RECYCLED

Georg Daniek, Frankfurt am Main, Fed. Rep. of Germany, assignor to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 24, 1980, Ser. No. 162,417

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1979, 2926528

Int. Cl.³ C01B *17/06*

U.S. Cl. 423—567 A **7 Claims**

1. A process for recovering elemental sulphur from filtrate solutions from the manufacture of sulphur dyestuffs containing sulphur dyestuffs and alkali metal sulphides or alkali metal polysulphides, or mixtures thereof comprising

(a) mixing said filtrate solution at an alkaline pH with a decolorizing amount of an iron or zinc compound which is a hydroxide or the salt of an inorganic acid whereby a precipitate is formed,

(b) separating the precipitate to isolate a decolorized solution.

(c) precipitating elemental sulfur from the decolorized solution by adding sulfur dioxide or alkali metal thiosulfate under acidic conditions, and

(d) separating the precipitated elemental sulfur.

4,309,402

PROCESS AND APPARATUS FOR PRODUCTION OF ELEMENTAL SULFUR

Ghazi R. Al-Muddarris, Cologne, Fed. Rep. of Germany, assignor to Davy International AG, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 968,399, Dec. 11, 1978, abandoned. This application Jul. 11, 1980, Ser. No. 168,355

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1977, 2755138

Int. Cl.³ C01B *17/04*

U.S. Cl. 423—574 R **16 Claims**

1. In the process for reacting a gas containing hydrogen sulfide and sulfur dioxide to form elemental sulfur via the Claus reaction, wherein said gas is passed through a plurality of solid catalyst beds at an elevated temperature which is below the sulfur dew point, to thereby charge said catalyst beds with at least a part of the sulfur formed and wherein said catalyst beds are subsequently regenerated by passing heated gas therethrough, the improvement which comprises:

(A) passing the hydrogen sulfide and sulfur dioxide containing gas during a charging phase through a first catalyst bed at a temperature below the sulfur dew point so as to charge the bed with sulfur;

(B) heating all effluent from the first catalyst bed during a first part of the first catalyst bed charging phase to a temperature above the sulfur dew point;

(C) passing said heated effluent to a sulfur-containing second catalyst bed in order to vaporize sulfur from said second

catalyst bed and to thereby regenerate said second catalyst bed;

(D) discontinuing the heating of said first catalyst bed effluent during a second part of the first catalyst bed charging phase such that the temperature of said effluent falls below the sulfur dew point;

(E) passing said cooler effluent through said regenerated second catalyst bed to thereby cool said regenerated second catalyst bed;

(F) passing the effluent from the second catalyst bed through a sulfur condenser so as to condense vaporized sulfur contained in the effluent;

(G) withdrawing sulfur condenser waste gas directly from the process; and

(H) reversing the direction of flow of the gas through said first and second catalyst beds after the first catalyst bed has been charged with sulfur.

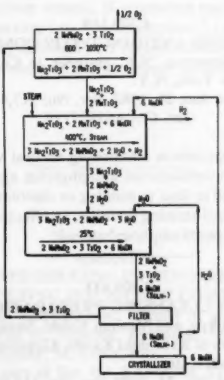
4,309,403
THERMOCHEMICAL GENERATION OF HYDROGEN AND OXYGEN FROM WATER

Paul R. Robinson, Knoxville, and Carlos E. Bamberger, Oak Ridge, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 119,738, Feb. 8, 1980. This application Nov. 14, 1980, Ser. No. 206,804

Int. Cl.³ C01B *1/02*

U.S. Cl. 423—648 R **6 Claims**



1. A cyclic thermochemical process for producing hydrogen comprising the steps of:

(a) reacting sodium manganate (III) and titanium dioxide to yield sodium titanate, manganese (II) titanate and oxygen:

(b) reacting sodium titanate and manganese (II) titanate formed in step (a) with sodium hydroxide, in the presence of steam to yield sodium titanate, sodium manganate (III), water and hydrogen;

(c) treating sodium titanate and sodium manganate (III) formed in step (b) with excess water to yield sodium manganate (III), titanium dioxide and sodium hydroxide;

(d) dissolving sodium hydroxide formed in step (c) in water and removing the thus-dissolved sodium hydroxide to yield a residue of sodium manganate (III) and titanium dioxide; and

(e) recycling the residue of sodium manganate (III) and titanium dioxide to step (a).

4,309,404
SUSTAINED RELEASE PHARMACEUTICAL COMPOSITIONS

Richard J. DeNeale, Willsboro; Paul C. Guley, Plattsburgh, and George Milosovich, Rouses Point, all of N.Y., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 65,315, Aug. 9, 1979, Pat. No. 4,248,857. This application Jan. 30, 1981, Ser. No. 230,154

Int. Cl.³ A61K *9/22, 9/32, 9/36*

U.S. Cl. 424—21 **15 Claims**

1. A sustained release pharmaceutical composition comprising a compressed core, a seal coating surrounding the core and a sugar coating surrounding the seal coated core wherein,

(a) the core comprises by weight of the core about 31% to about 53% of the drug, about 7% to about 14.5% carboxypolymethylene, about 0% to about 3% zinc oxide, about 4.5% to about 10% stearic acid and about 3% to about 30% mannitol;

(b) the seal coating comprises a film coating selected from the group consisting of enteric and non-enteric materials and mixtures thereof; and

(c) the sugar coating comprises sugar and a loading dose of said drug. and with the proviso that when the seal coating consists essentially of an enteric coating material the drug is other than propranolol or its pharmaceutically acceptable salts.

4,309,405
SUSTAINED RELEASE PHARMACEUTICAL COMPOSITIONS

Paul C. Guley, Plattsburgh; Richard J. DeNeale, Willsboro, and George Milosovich, Rouses Point, all of N.Y., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 65,317, Aug. 9, 1979, Pat. No. 4,248,858. This application Jan. 30, 1981, Ser. No. 230,156

Int. Cl.³ A61K *9/22, 9/32, 9/36*

U.S. Cl. 424—21 **13 Claims**

1. A sustained release pharmaceutical composition comprising a compressed core, a seal coating surrounding the core and a sugar coating surrounding the seal coated core wherein,

(a) the core comprises a drug in an amount of about 20% to about 70% by weight of the core, at least one pharmaceutically acceptable water soluble polymer selected from the group consisting of hydroxypropyl methyl cellulose, hydroxypropyl cellulose, xanthan gum and karaya gum, and at least one pharmaceutically acceptable water insoluble polymer mixture selected from the group consisting of ethylcellulose and ethyl cellulose and at least one of carboxypolymethylene, hydroxypropyl methylcellulose phthalate and hydroxypropylcellulose, said polymers in an amount of about 30% to about 72% by weight of the core;

(b) the seal coating comprises a film coating material selected from the group consisting of enteric and non-enteric materials and mixtures thereof; and

(c) the sugar coating comprises sugar and a loading dose of said drug contained in the core;

with the proviso that when the water soluble polymer is only hydroxypropyl methylcellulose then the water insoluble polymer is not only ethylcellulose, and that when the water insoluble polymer is only ethylcellulose than the water soluble polymer is not only hydroxypropyl methylcellulose; and with the further proviso that when the seal coating consists essentially of an enteric coating material the drug is other than propranolol or its pharmaceutically acceptable salts.

4,309,406
SUSTAINED RELEASE PHARMACEUTICAL COMPOSITIONS

Paul C. Guley, Plattsburgh; Richard J. DeNeale, Willsboro, and George Milosovich, Rouses Point, all of N.Y., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 56,156, Jul. 10, 1979, Pat. No. 4,248,856. This application Jan. 30, 1981, Ser. No. 230,157

Int. Cl.³ A61K *9/22, 9/32, 9/36*

U.S. Cl. 424—21 **15 Claims**

1. A sustained release pharmaceutical composition comprising a compressed core containing a drug, a seal coating surrounding the core and a sugar coating surrounding the seal coated core wherein,

(a) the core comprises a therapeutically effective amount of at least one drug in an amount of about 29% to about 64% by weight of the core, and the cellulose polymers hydroxypropyl methylcellulose and ethylcellulose in an amount of 30% to about 45% by weight of the core; and

(b) the seal coating comprises a film coating material selected from the group consisting of enteric and nonenteric materials and mixtures thereof; and

(c) the sugar coating comprises sugar and a loading dose of at least one drug contained in the core in which the ratio of said one drug in the sugar coating to said one drug in the core is from about 1:15 to about 1:3

and with the proviso that when the seal coating consists essentially of an enteric-coating material the drug is other than propranolol or its pharmaceutically acceptable salts.

4,309,407
ALKENYL-SUBSTITUTED THIENYLALKANECARBOXYLIC ACIDS AND DERIVATIVES THEREOF

Hans-Heiner Lautenschläger, Cologne; Hans Betzing, Kerpen-Horrem; Johannes Winkelmann, Cologne, and Manfred Probst, Frechen, all of Fed. Rep. of Germany, assignors to A. Nattermann & Cie. GmbH, Cologne, Fed. Rep. of Germany

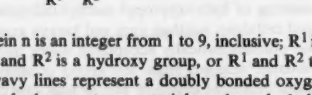
Filed Nov. 12, 1980, Ser. No. 206,077

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1979, 2946810

Int. Cl.³ A61K *31/38*; C07O *333/24*

U.S. Cl. 424—275 **38 Claims**

1. A compound of the formula



(I)

wherein n is an integer from 1 to 9, inclusive; R^1 is a hydrogen atom and R^2 is a hydroxy group, or R^1 and R^2 together with the wavy lines represent a doubly bonded oxygen atom; and R^3 is a hydrogen atom, a straight or branched-chain saturated hydrocarbon group containing 1 to 6 carbon atoms, or a pharmaceutically acceptable alkali cation.

4,309,408
EFFERVESCENT POWDERS

Ram D. Pathak, Worcester Park, and Elizabeth J. Treherne, Surrey, both of England, assignors to Beecham Group Limited, England

Filed Nov. 9, 1979, Ser. No. 92,924

Claims priority, application United Kingdom, Nov. 16, 1978, 44839/78

Int. Cl.³ A61K *31/165*; A61L *9/04*

U.S. Cl. 424—44 **5 Claims**

1. An analgesic effervescent powder comprising paracetamol D.C. and metoclopramide or an acid addition salt thereof in a weight ratio of from 80:1 to 120:1 respectively.

4,309,409
ANTI-CORROSION FORMULATION FOR TOOTHPASTES

Miguel Coll-Palagos, Rye, and Frances C. Benkwitt, Yonkers, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 733,734, Oct. 26, 1976, abandoned, and a continuation-in-part of Ser. No. 643,444, Dec. 22, 1975, abandoned. This application Feb. 8, 1980, Ser. No. 120,012

Int. Cl.³ A61K *7/16*

U.S. Cl. 424—52 **18 Claims**

1. A formulation which is adapted to be contained in a fluoride toothpaste containing an effective amount of water soluble fluoride compound for protection from tooth decay and at least one compound selected from the group consisting of an insoluble alkali metal metaphosphate and calcium pyrophosphate, said formulation being adapted to be packaged in an unlined aluminum tube, the formulation consisting essentially of:

(a) zinc oxide; and

(b) an acidic pH adjuster selected from the group consisting of phosphoric acid and its acid salts, sodium aluminum phosphate (1:3:8), magnesium dihydrogen phosphate, monomagnesium phosphate, aluminum dihydrogen phosphate, monoaluminum phosphate, ammonium dihydrogen phosphate, monoammonium phosphate, boric aicd, oxalic acid, and tartaric acid; the amounts of (a) and (b) being effective to prevent corrosion of said tube, to maintain the pH of the toothpaste in the range of from about 5.5 to 6.8 and to give a smooth texture to the toothpaste formulation, said formulation being substantially free of sodium acid pyrophosphate, citric acid, or acetic acid as the acidic pH adjuster.

4,309,410
NON-STAINING ANTIGINGIVITIS COMPOSITION

Abdul Gaffar, Somerset, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Jan. 31, 1980, Ser. No. 117,410

Int. Cl.³ A61K *7/16*

U.S. Cl. 424—57 **9 Claims**

1. An oral composition comprising an oral vehicle, tranexamic acid as non-antibacterial antigingivitis agent, whose use has been observed to lead to staining or discoloration of dental surfaces, and as anti-staining additive, an effective stain-inhibiting amount of a peroxydiphosphate salt.

4,309,411
SKIN CLEANSING PREPARATION

Hiroshi Toida, Tokyo, and Masumi Koishi, Sagamihara, both of Japan, assignors to Kabushiki Kaisha Kishohin Kagaku Kaiho Kenkyusho, Tokyo, Japan

Filed Jan. 21, 1980, Ser. No. 113,803

Claims priority, application Japan, Mar. 23, 1979, 54/34775

Int. Cl.³ A61K *7/021, 7/48*

U.S. Cl. 424—63 **13 Claims**

1. A method of preparing a cleansing cosmetic preparation which is capable of absorbing both hydrophilic and oleophilic dirts from the skin, which consists essentially of:

(a) first mixing by agitation particles of a water-insoluble polymer and particles of an inorganic pigment until the inorganic pigment particles are adhered to the surface of the water-insoluble polymer particles, the weight ratio of inorganic pigment particles to polymeric particles being from 0.01:1 to 1:1; and

(b) then incorporating the water-insoluble polymer particles with the inorganic pigment particles adhered thereto into a previously prepared aqueous solution of a water-soluble polymer, the weight ratio of water-soluble polymer to pigment-coated water-insoluble polymer being from 1:0.01 to 1:0.5.

4,309,412

GERMANIUM-CONTAINING ORGANIC POLYMER AND ITS USE IN THE TREATMENT OF LIVER DISORDERS

Akira Ishikawa, Tokyo; Yukihito Ishida, Fujisawa; Shiro Ikegami, Funabashi; Hiroshi Satoh, Tokyo, all of Japan; Ryuichi Sato, 2310, Kamikoizumi, Oizumicho, Ora-gun, Gunma-ken, Japan; Setuso Tomisawa, and Shigeru Toyoshima, both of Tokyo, Japan, assignors to Ryuichi Sato, Japan

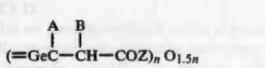
Division of Ser. No. 12,151, Feb. 14, 1979. This application Feb. 29, 1980, Ser. No. 125,945

Claims priority, application Japan, Mar. 1, 1978, 53-21992; Mar. 1, 1978, 53-21993

Int. Cl.[3] A61K *31/74, 31/28*

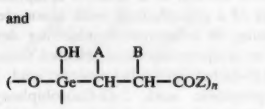
U.S. Cl. 424—78 5 Claims

1. A method of treating an animal suffering from at least one of acute and chronic hepatitis and liver cirrhosis, which comprises; administering to said animal an effective amount to relieve said suffering of a polymer selected from those of the formulae:



(III)

and



(IV)

wherein A represents one of a hydrogen atom, alkyl having 1 to 3 carbon atoms, —COOH, or —COOR (wherein R is alkyl having 1 to 3 carbon atoms), B represents one of a hydrogen atom and alkyl having 1 to 3 carbon atoms; Z represents one of a hydroxy, alkoxy having 1 to 3 carbon atoms or alkyl having 1 to 3 carbon atoms; and n is an integer greater than 3, inclusive.

4,309,413

METHOD OF PRODUCING IMMUNE RESPONSE BY ADMINISTERING POLYMERIC COMPOSITION

Joseph E. Fields, Ballwin, Mo.; Samuel S. Asculai, Rehovot, Israel, and John H. Johnson, Kirkwood, Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 5,638, Jan. 22, 1979, Pat. No. 4,255,537. This application Oct. 1, 1980, Ser. No. 192,663

Claims priority, application New Zealand, Jan. 18, 1980, 192649

Int. Cl.[3] A61K *31/74, 31/78, 39/00;* C08F *8/30*

U.S. Cl. 424—78 7 Claims

1. The method of regulating an immune response in a warm-blooded animal suffering from an immune reaction comprising administering to said animal an effective immune regulatory amount of a composition selected from the group consisting of a copolymer of at least one olefin monomer having from 2 to about 4 carbon atoms and at least one α,β-unsaturated polycarboxylic anhydride having from 4 to about 6 carbon atoms, having an average molecular weight of from about 300 to about 1500, and derivatized to contain both (a) half-amide, half-carboxyl acid groups and (b) imide groups in which said imide groups comprise from about 5% by weight to about 40% by weight of said derivatized groups, and the pharmaceutically acceptable cationic salt derivatives of said derivatized copolymer.

4,309,414

ANTIINFLAMMATORY ANALGESIC GELLED OINTMENT

Toshio Inagi, Hachioji; Toyojiro Muramatsu, Sayama, and Hidetaka Nagai, Hachioji, all of Japan, assignors to Kowa Company Limited, Nagoya, Japan

Continuation of Ser. No. 918,021, Jun. 22, 1978, abandoned. This application Oct. 23, 1979, Ser. No. 87,574

Int. Cl.[3] A61K *31/40, 31/78*

U.S. Cl. 424—81 4 Claims

1. An anti-inflammatory analgesic ointment comprising: indomethacin in the range of from 0.5–1.5% by weight; a medium consisting of a glycol in the range of from 5–35% by weight, an alcohol in the range of from 10–50% by weight, and water in the range of 30–55% by weight and a gelating agent in an amount of 0.5 to 5% by weight selected from the group consisting of a cellulose compound and a carboxyvinyl polymer which has been neutralized with an amine; and adjuvant in the range of from 0.5% to 5% by weight selected from the group consisting of a C_1–C_5 alcohol ester of a C_4–C_{14} monocarboxylic acid and a C_1–C_3 alcohol diester of a C_4–C_{10} dicarboxylic acid; and water in an amount sufficient to make up the balance of the ointment, said ointment being adjusted to the pH of 5.5 to 7.5.

4,309,415

METHOD AND COMPOSITION FOR TREATING INFLAMMATORY DISORDERS

David F. Horrobin, Montreal, Canada, assignor to Verronmay Limited, London, England

Filed Apr. 11, 1979, Ser. No. 29,058

Claims priority, application United Kingdom, Apr. 11, 1978, 14172/78; Sep. 4, 1978, 35437/78

Int. Cl.[3] A61K *45/02, 31/54, 33/30, 31/20*

U.S. Cl. 424—85 37 Claims

1. A pharmaceutical composition useful for the treatment of inflammatory disorders comprising: (a) an effective amount of γ-linolenic acid or physiologically functional derivative thereof and/or dihomo-γ-linolenic acid or physiologically functional derivative thereof, and (b) an effective, conjoint amount of another material enhancing the synthesis or action of thromoboxane A2, alone or in an acceptable pharmaceutical vehicle.

4,309,416

VACCINES FROM TAXONOMICALLY SIMILAR ORGANISMS

John B. Gratzek, Athens, Ga.; Beverly A. Goven, Bellevue, Wash., and Donald L. Dawe, High Shoals, Ga., assignors to Research Corporation, New York, N.Y.

Filed Sep. 20, 1979, Ser. No. 77,269

Int. Cl.[3] A61K *39/002*

U.S. Cl. 424—88 6 Claims

1. A veterinary vaccine for immunizing fish against infection by *Ichthyophthirius multifiliis* and *Cryptocaryon irritans* comprising an effective amount of ciliary protein derived from *Tetrahymena pyriformis* cilia and an inert diluent.

4,309,417

PROTEIN FORTIFIED ISOTONIC BEVERAGES

Lorna C. Staples, Teaneck, N.J., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Jul. 10, 1980, Ser. No. 168,220

Int. Cl.[3] A61K *33/42, 37/00*

U.S. Cl. 424—128 5 Claims

1. An isotonic beverage composition comprising from about 10 to about 50 milliequivalents/liter sodium ion, from about 0.5 to about 20 milliequivalents/liter potassium ion, from about 10 to about 35 milliequivalents/liter chloride ion, from about 1 to about 28 milliequivalents/liter phosphate ion, from about 1 to about 75 grams per liter of natural sweetener, from about 0 to

about 0.6 grams per liter of artificial sweetener and from about 1% to about 3% of a whey protein concentrate prepared by ultrafiltration and having from about 40% to about 60% protein, wherein most of the electrolytes are provided by said whey protein concentrate, and said composition having an osmolarity of from about 140 to about 375 mOs/kg.

4,309,418

ANTI-TUMOR AGENT FROM HUMAN SERUM AND PROCESS

Saul Green, New York, N.Y., assignor to Sloan-Kettering Research Institute for Cancer, New York, N.Y.

Filed Mar. 25, 1980, Ser. No. 133,742

Int. Cl.[3] A61K *37/00, 35/14;* A23J *11/06;* C07G *7/00*

U.S. Cl. 424—177 14 Claims

1. Process for preparing an anti-tumor agent from buffered human serum which comprises:

(i) removing a first portion of proteins from the serum by addition of ammonium sulfate salt in an amount up to about 35% of the amount necessary to form a saturated solution while maintaining the pH at 7; thereafter

(ii) centrifuging the serum at a force of 105,000 g to separate the first portion of proteins, and discarding the first portion of proteins;

(iii) recovering a second portion of proteins from the serum by addition of ammonium sulfate salt in an amount to total an amount greater than about 35% up to about 70% of the amount necessary to form a saturated solution while maintaining the pH at 7, and retaining the second portion of proteins;

(iv) desalting the second portion of proteins;

(v) gel filtering the desalted proteins; and

(vi) collecting a gel filtered active fraction having a molecular weight greater than 150,000.

10. Anti-tumor agent derived from human serum comprising a protein fraction having a molecular weight of more than 150,000 which is stable at 90° C. for at least one hour, non-dialyzable and inhibits the growth of HeLa tumor cells.

4,309,419

METHOD FOR THE INHIBITION OF IMMUNE RESPONSE

Gerald Wolberg, and Thomas P. Zimmerman, both of Cary, N.C., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Filed Oct. 12, 1979, Ser. No. 84,445

Claims priority, application United Kingdom, Oct. 13, 1978, 40447/78

Int. Cl.[3] A61K *31/70;* C07H *19/16*

U.S. Cl. 424—180 14 Claims

1. A method for the inhibition of immune response in a mammal comprising the administration, to a mammal in need thereof, of an immune response inhibiting, non-toxic amount of 3-deazaadenosine or a pharmaceutically acceptable salt thereof.

4,309,420

STABLE INJECTABLE SOLUTIONS OF INDOLEACETIC ACID DERIVATIVES

Miklos Ghyczy; Götz Ritzmann; Adorjan Erdös, and Eugen Etschenberg, all of Cologne, Fed. Rep. of Germany, assignors to A. Nattermann & Cie. GmbH, Cologne, Fed. Rep. of Germany

Filed Apr. 10, 1980, Ser. No. 139,117

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1979, 2914789

Int. Cl.[3] A61K *31/40, 31/685*

U.S. Cl. 424—199 14 Claims

1. A method of treating an inflammatory illness which comprises administering to a subject suffering therefrom an effective amount of a solution comprising a water-soluble complex of a phospholipid and an inflammation-inhibiting indoleacetic acid derivative selected from the group consisting of 1-(p-chlorobenzoyl)-5-methoxy-2-methyl-indole-3-acetic acid, 1-(p-chlorobenzoyl)-5-methoxy-2-methyl-indole-3-acetic acid glycolic acid ester, and 1-cinnamoyl-5-methoxy-2-methyl-indole-3-acetic acid, the molar ratio of said derivative to said phospholipid ranging from about 1:0.5 to 1:10.

4,309,421

STABILIZED PARENTERALLY ADMINISTRABLE SOLUTIONS

Miklos Ghyczy; Götz Ritzmann; Adorjan Erdös, and Eugen Etschenberg, all of Cologne, Fed. Rep. of Germany, assignors to A. Nattermann & Cie. GmbH, Cologne, Fed. Rep. of Germany

Filed Apr. 10, 1980, Ser. No. 139,118

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1979, 2914788

Int. Cl.[3] A61K *31/19, 31/685*

U.S. Cl. 424—199 21 Claims

1. A method of treating a subject suffering from an inflammatory illness which comprises administering parenterally to said subject an effective amount of a solution comprising a water-soluble complex of a phospholipid with a non-steroid antiphlogistic comprising an inflammation-inhibiting derivative of an arylacetic or arylpropionic acid selected from the group consisting of 2-(4-isobutylphenyl)-propionic acid, 2-(6-methoxy-2-naphthyl)-propionic acid, 2-(2-fluorobiphenyl-4-yl)-propionic acid, 4-allyloxy-3-chlorophenylacetic acid, 2-(3-benzylphenyl)-benzoic acid, 2-(2,6-dichlorophenylamino)-phenylacetic acid and 2-(3-phenyloxyphenyl)-acetic acid, the molar ratio of said derivative to said phospholipid ranging from about 1:0.3 to 1:10.

4,309,422

BENZOYLHYDRAZONES OF ARYL PHOSPHATES AND PHOSPHONATES

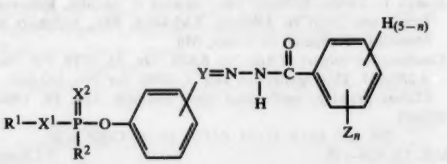
Leonard J. Stach, Riverside, and Robert N. Wilke, Oak Park, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Filed Sep. 15, 1980, Ser. No. 187,388

Int. Cl.[3] C07F *9/165;* A01N *57/14*

U.S. Cl. 424—211 10 Claims

1. A compound of the formula



wherein X^1 and X^2 are each independently selected from the group consisting of oxygen and sulfur; R^1 is alkyl; R^2 is selected from the group consisting of alkyl, alkoxy and alkylthio; Y is a straight or branched hydrocarbon chain of from 1 to 5 carbon atoms; Z is selected from the group consisting of lower alkyl, lower alkenyl, lower alkoxy, lower alkylthio, halogen, halologenalkyl and nitro; and n is an integer from 0 to 5.

9. An insecticidal composition comprising an inert carrier and as an essential active ingredient, in a quantity toxic to insects, a compound of claim 1.

10. A method of controlling insects comprising contacting said insects or the locus of said insects with an insecticidal composition of claim 9.

4,309,423

COMPOUNDS OF THE PREGNANE SERIES WITH AN OXYGEN FUNCTION IN THE 19-POSITION, PROCESSES FOR THEIR MANUFACTURE AND PHARMACEUTICAL PREPARATIONS CONTAINING THESE COMPOUNDS

Michel Biollaz, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

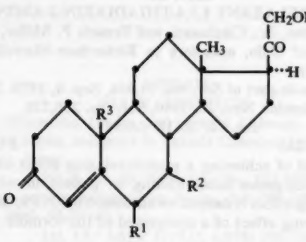
Continuation of Ser. No. 909,870, May 26, 1978, abandoned. This application Feb. 8, 1980, Ser. No. 119,702

Claims priority, application Luxembourg, May 31, 1977, 77457

Int. Cl.[3] A61K *31/56*

U.S. Cl. 424—242 19 Claims

1. A 19-oxygenated steroid of the pregnane series having the formula I



in which

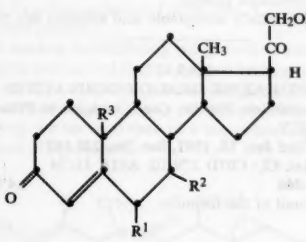
R^1 represents a hydrogen atom;

R^2 represents an α-oriented lower alkanoylthio group;

R^3 represents hydroxymethyl, hydroxymethyl etherified by lower alkyl or hydroxymethyl esterified by lower alkanoyl; and

R^4 represents a hydrogen atom or the acyl radical of benzoic acid or an aliphatic monocarboxylic acid having 1–8 carbon atoms.

12. A therapeutic method for alleviating pathological conditions which are consequent to hyperaldosteronism in a warm-blooded animal which consists in the administration to said animal in need thereof of an effective amount of an aldosterone-antagonizing pharmaceutical composition comprising a correspondingly effective amount of a compound of formula I



in which

R^1 represents a hydrogen atom;

R^2 represents an α-oriented lower alkanoylthio group, or R^1 and R^2 together represent a carbon-carbon bond;

R^3 represents hydroxymethyl, hydroxymethyl etherified by lower alkyl or hydroxymethyl esterified by lower alkanoyl; and

R^4 represents a hydrogen atom or the acyl radical of benzoic acid or an aliphatic monocarboxylic acid having 1–8 carbon atoms; or the corresponding 1,2-dehydro-derivative of said compound wherein R^1 and R^2 is a carbon-carbon bond; together with a pharmaceutical excipient.

4,309,424

4-PHENYL-1,3-BENZODIAZEPINES

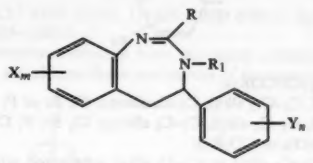
Lawrence L. Martin, Lebanon, N.J.; Manfred Worm, Wiesbaden-Naurod, Fed. Rep. of Germany, and Charles A. Crichlow, Piscataway, N.J., assignors to Hoechst-Roussel Pharmaceuticals Incorporated, Somerville, N.J.

Continuation-in-part of Ser. No. 948,896, Oct. 5, 1978, abandoned. This application Nov. 5, 1979, Ser. No. 91,062

Int. Cl.[3] A61K *31/55*; C07D *243/04*

U.S. Cl. 424—244 81 Claims

1. A compound of the formula



in which R is hydrogen or alkyl of from 1 to 5 carbon atoms; R_1 is hydrogen, alkyl of from 1 to 5 carbon atoms, cycloalkylalkyl of from 4 to 8 carbon atoms or aralkyl having from 1 to 5 carbons in the alkyl moiety, X and Y are the same or different and each can be hydrogen, chlorine, bromine, fluorine, methoxy, alkyl of from 1 to 3 carbon atoms, hydroxy, or trifluoromethyl; m is the integer 1 or 2; n is the integer 1, 2 or 3; and the optical antipodes thereof; and a physiologically acceptable salt thereof.

70. A method of treating depression in mammals which comprises administering to a patient a physiologically effective amount of a compound defined in claim 1.

73. A method of alleviating pain in mammals which comprises administering to a patient a physiologically effective amount of a compound defined in claim 1.

76. A method of treating convulsions in mammals which comprises administering to a patient a physiologically effective amount of a compound defined in claim 1.

4,309,425

MITICIDAL, INSECTICIDAL, OVICIDAL AND FUNGICIDAL N-(N',N'-DIARYLAMINOTHIO)SULFONAMIDES

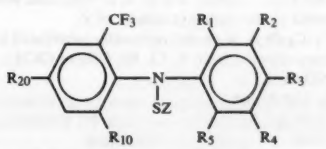
Jiin-Duey Cheng, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 69,752, Aug. 24, 1979, abandoned. This application Apr. 11, 1980, Ser. No. 134,883

Int. Cl.[3] C07C *143/74*, *143/78*

U.S. Cl. 424—244 31 Claims

1. A compound of the formula:



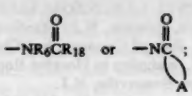
wherein

R_1, R_3 and R_4 are independently H, F, Cl, Br, NO_2, CF_3, OCF_3, OCF_2CF_2H or $S(O)_kR_9$;

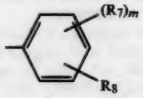
R_2 is H, F, Cl, Br, NO_2, CF_3 or $S(O)_kR_9$;

R_5 is H, Cl, F, Br or NO_2;

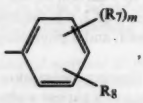
Z is $—NR_6SO_2R_{13}$,



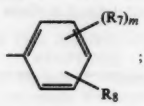
R_6 is C_1–C_8 alkyl, C_3–C_5 alkoxyalkyl, C_2–C_4 chloroalkyl,



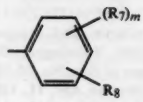
or $R_{14}CHCOR_{15}$;
R_7 is H, C_1–C_{12} alkyl, C_1–C_4 alkoxy, Cl, Br or F;
R_8 is H, C_1–C_4 alkyl, C_1–C_4 alkoxy, Cl, Br, F, CF_3, NO_2, $R_{11}S(O)_k$ or CO_2R_{12};
R_9 is C_1–C_2 alkyl or C_1–C_2 alkyl substituted with 2 to 4 atoms or Cl and/or F;
R_{10} is H, NO_2 or CF_3;
R_{11} is C_1–C_2 alkyl or C_2–C_4 dialkylamino,
R_{12} is C_1–C_4 alkyl;
R_{13} is



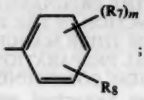
naphthyl, $NR_{16}R_{17}$, CF_3 or C_1–C_{20} alkyl;
R_{14} is H or CH_3;
R_{15} is C_1–C_4 alkoxy or $N(R_{17})_2$;
R_{16} is C_1–C_3 alkyl, OCH_3 or



R_{17} is C_1–C_3 alkyl;
R_{18} is H, C_1–C_8 alkyl,



or $NR_{16}R_{17}$;
A is $-(CH_2)_3-$, $-(CH_2)_4-$, $-(CH_2)_5-$, $X(CH_2)_2-$ or $-X(CH_2)_3-$, where X is O, S, or NR_{19} and where X is bonded to the carbonyl carbon of Z;
R_{19} is C_1–C_4 alkyl, or phenyl optionally substituted with 1 or 2 groups selected from F, Cl, Br, CH_3 or OCH_3;
R_{20} is NO_2 or CF_3;
k is 0, 1 or 2; and
m is 1 or 2;
provided that
(1) at least two of R_1, R_2, R_3, R_4 and R_5 are hydrogen;
(2) no more than two of the substituents R_1, R_2, R_3 and R_4 are simultaneously NO_2 or CF_3;
(3) when two NO_2 or two $S(O)_kR_9$ groups are present, they are not ortho to one another;
(4) only one of R_6 and R_{13} or one of R_6 and R_{16} or one of R_6 and R_{18} is



(5) when R_{11} is dialkylamino, then k is 2; and
(6) R_{10} and R_{20} are not simultaneously CF_3;
and further provided that when R_{10} is NO_2, then
(a) R_1 is H, F or Cl when R_3 is other than H, F or Cl;
(b) when $R_1=R_3=R_5$, then R_1, R_3 and R_5 are either H or F; and
(c) R_5 is either H or F.

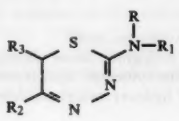
4,309,426

MUSCLE-RELAXANT 1,3,4-THIADIAZIN-2-AMINES

Winton D. Jones, Jr., Cincinnati, and Francis P. Miller, Loveland, both of Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

Continuation-in-part of Ser. No. 71,966, Sep. 4, 1979. This application Nov. 20, 1980, Ser. No. 208,728
Int. Cl.³ A61K *31/54*
U.S. Cl. 424—246 **8 Claims**

1. A method of achieving a muscle-relaxing effect in a patient which comprises administering to patient in which a muscle relaxing effect is desired an amount effective to achieve a muscle-relaxing effect of a compound of the formula



wherein
R is H, or C_{1-7} straight or branched chain alkyl;
R_1 is H, C_{1-7} straight or branched chain alkyl, allyl or phenyl;
R_2 is phenyl, phenyl monosubstituted with F, Cl, C_{1-4} straight or branched chain alkyl or phenyl disubstituted in the 2- and 4-positions with Cl or C_{1-4} straight or branched chain alkyl; and
R_3 is H or C_{1-4} straight or branched chain alkyl, with the proviso that when R_3 is straight or branched chain alkyl, R_2 is unsubstituted phenyl;
or a pharmaceutically acceptable acid addition salt thereof.

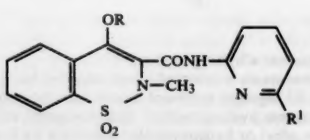
4,309,427

BENZOTHIAZINE DIOXIDE DERIVATIVES

Joseph G. Lombardino, Niantic, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Jan. 15, 1981, Ser. No. 225,162
Int. Cl.³ C07D *279/02*; A61K *31/54*
U.S. Cl. 424—246 **14 Claims**

1. A compound of the formula:



wherein R is selected from the group consisting of alkanoyl having from two to nine carbon atoms, benzoyl, toluoyl, thenoyl, furoyl, lower alkanesulfonyl and benzenesulfonyl, and R^1 is hydrogen or methyl.

13. A method for treating inflammatory conditions in a

warm-blooded animal, which comprises administering to said animal an effective anti-inflammatory amount of a compound as claimed in claim 1.

4,309,428

MAYTANSINOIDS

Osamu Miyashita, Osaka, and Hiroshi Akimoto, Nishinomiya, both of Japan, assignors to Takeda Chemical Industries, Ltd., Tokyo, Japan

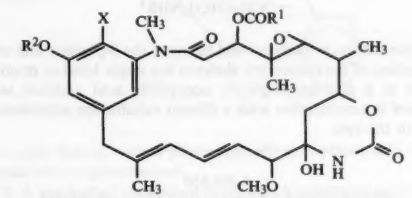
Filed Jul. 23, 1980, Ser. No. 171,459

Claims priority, application Japan, Jul. 30, 1979, 54-97779; Jun. 9, 1980, 55-78142

Int. Cl.³ A61K *31/535;* C07D *498/16*

U.S. Cl. 424—248.54 12 Claims

1. A compound of the formula:



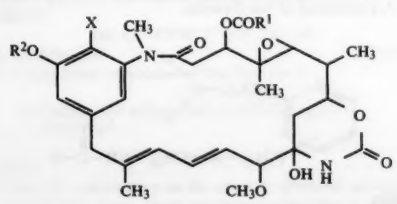
wherein

X is hydrogen or chlorine,

R^1 is C_{2-4}alkyl

R^2 is C_{1-5}alkyl substituted with oxo, C_{2-5}alkoxycarbonyl, or/and phenyl.

12. A method for inhibiting the growth of tumor cells and prolonging the survival time of a tumor-bearing warm-blooded animal, which comprises administering to said animal an amount effective for inhibiting the growth of tumor cells and prolonging the survival time of a tumor-bearing animal of a compound of the formula:



wherein

X is hydrogen or chlorine,

R^1 is C_{2-4}alkyl

R^2 is C_{1-5}alkyl substituted with oxo, C_{2-5}alkoxycarbonyl, or/and phenyl.

4,309,429

XANTHENE AND THIOXANTHENE DERIVATIVES, COMPOSITIONS THEREOF, AND TREATMENT THEREWITH

Niels Lassen, Gentofte; Klaus P. Bøgesø, Lyngby; Peter B. Hansen, Allerød; Jørn L. M. Buus, Bjaeverskov, and Allan J. Bigler, Copenhagen, all of Denmark, assignors to Kefalas A/S, Copenhagen-Valby, Denmark

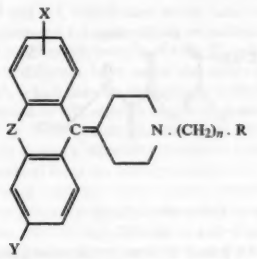
Division of Ser. No. 35,735, May 3, 1979. This application Dec. 21, 1979, Ser. No. 105,985

Claims priority, application United Kingdom, May 12, 1978, 19310/78

Int. Cl.³ A61K *31/54, 31/445;* C07D *409/14, 413/14*

U.S. Cl. 424—248.4 9 Claims

1. A compound selected from the group consisting of (1) xanthene- and thioxanthene derivatives of the formula:



1

wherein

X is selected from the group consisting of halogen, an alkyl group with from one to four carbon atoms inclusive, an alkyloxy group with from one to four carbon atoms inclusive, a methylthio group, a methylsulphonyl group, a dimethylsulphamoyl group, a trifluoromethyl group and an acetyl group;

Y is selected from the group consisting of hydrogen, fluorine and a methyl group;

Z is selected from the group consisting of oxygen and sulphur;

n is an integer from zero to three inclusive, and

R is selected from the group consisting of five- or six-membered saturated heterocyclic rings having one or two hetero atoms selected from oxygen and nitrogen atoms and being optionally substituted with a group selected from an optionally esterified hydroxy group and an oxo group, any esterified hydroxy group present being an ester of an aliphatic carboxylic acid having ten to twenty-two carbon atoms inclusive, said heterocyclic rings being selected from the group consisting of dioxanyl, tetrahydropyranyl, tetrahydrofuryl, piperidyl, morpholinyl, oxazolyl, and imidazolyl, and (2) a non-toxic pharmaceutically acceptable acid addition salt thereof.

4,309,430

PYRAZINYL-1,2,4-OXADIAZOLE-5-ONES, FOR TREATMENT OF EDEMA, AND PROCESSES FOR PREPARING SAME

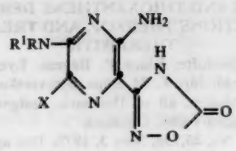
Mark G. Bock, Hatfield, and Robert L. Smith, Lansdale, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 27, 1980, Ser. No. 163,614

Int. Cl.³ A61K *31/54, 31/42;* C07D *241/08*

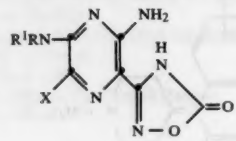
U.S. Cl. 424—250 11 Claims

1. A method of treatment of edema which comprises administering to a patient in need of such treatment a pharmaceutically effective dose of the formula



wherein
R is hydrogen or lower alkyl (C_{1-5}),
R^1 is hydrogen or lower alkyl (C_{1-5}),
R and R^1 can be joined to form an alkylene group of from 2–4 carbon atoms, and
X is halo, cyano or phenyl.

5. A compound of the formula:



wherein
R is hydrogen or lower alkyl (C_{1-5}),
R^1 is hydrogen or lower alkyl (C_{1-5}),
R and R^1 can be joined to form an alkylene group of from 2–4carbon atoms, and
X is halo, cyano or phenyl.

4,309,431

METHOD OF INHIBITING GROWTH OF TUMOR CELLS

Gordon H. Svoboda, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 720,711, Aug. 7, 1976, abandoned, which is a division of Ser. No. 374,588, Jun. 28, 1973, Pat. No. 3,985,899, which is a continuation of Ser. No. 268,406, Jul. 3, 1972, abandoned, which is a continuation-in-part of Ser. No. 46,811, Jun. 16, 1970, abandoned, which is a continuation-in-part of Ser. No. 840,114, Jun. 18, 1969, abandoned, which is a continuation-in-part of Ser. No. 536,905, Mar. 23, 1966, abandoned. This application Oct. 20, 1977, Ser. No. 843,776

Int. Cl.[3] A61K *31/435*

U.S. Cl. 424—257 **4 Claims**

1. A method of treating multiple myeloma in humans which comprises administering acronycine to a patient suffering therefrom in an oncolytic amount.

4,309,432

COMPOSITIONS FOR TREATING GLAUCOMA CONTAINING A CARBOSTYRIL

Nobuyuki Tanaka, Tokushima; Yoichi Nishinakamura, Ibaragi, and Kazuyuki Nakagawa, Tokushima, all of Japan, assignors to Otsuka Pharmaceutical Company, Ltd., Tokyo, Japan

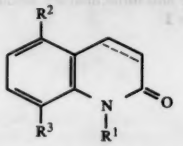
Filed Jan. 2, 1980, Ser. No. 109,057

Claims priority, application Japan, Jan. 30, 1979, 54/10108; Jun. 6, 1979, 54/70361

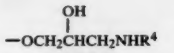
Int. Cl.[3] A61K *31/47*

U.S. Cl. 424—258 **10 Claims**

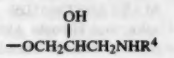
1. An ophthalmic solution comprising about 0.1 to about 2% by weight of a compound of the formula:



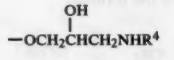
wherein R^1 is hydrogen, lower alkyl or lower alkenyl, R^2 is hydrogen or a group



wherein R^4 is lower alkyl, cycloalkyl or lower alkyl substituted by phenyl or substituted by phenyl having a lower alkoxy substituent on the phenyl nucleus, R^3 is a group



wherein R^4 is as defined above when R^2 is hydrogen, or R^3 is hydrogen, hydroxyl, ureido, lower alkynyloxy, lower alkoxy having a lower alkanoyl substituent, lower alkanoylamino or lower alkenyloxy when R^2 is



and the carbon-to-carbon bond between the 3-position and the 4-position of the carbostyril skeleton is a single bond or double bond or a pharmacologically acceptable acid addition salt thereof in combination with a diluent suitable for administration to the eye.

4,309,433

PYRIDINECARBONAMIDO-OXY OR THIO LOWERALKYL-1-(DILOWERALKYLAMINOLOWERALKYL)BENZENE AND DERIVATIVES THEREOF, COMPOSITIONS CONTAINING SAME AND METHOD OF USING SAME

Kentaro Hirai, Kyoto; Teruyuki Ishiba, Takatsuki; Shigeru Matsutani, Sakai; Itsuo Makino, Kobe; Toshio Fujishita, Neyagawa; Masami Doteuchi, Hirakata, and Koichi Otani, Kawachinagano, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

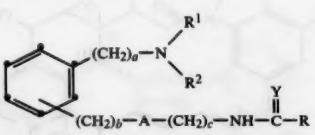
Filed Jun. 30, 1980, Ser. No. 164,016

Claims priority, application Japan, Jul. 3, 1979, 54-84801

Int. Cl.[3] A61K *31/455*; C07D *401/10, 213/56*

U.S. Cl. 424—266 **7 Claims**

1. A compound of the formula:



wherein
A is oxygen or sulfur,
Y is oxo or thioxo,
a is an integer of 1 to 3,
b is an integer of 0 to 3,
c is an integer of 1 to 4,
R^1 is C_1 to C_5 alkyl,

R^2 is hydrogen or C_1 to C_5 alkyl, or
R^1 and R^2 taken together represent pyrrolidinyl, and
R is pyridyl or pyridyl substituted by 1 to 3 substituents selected from the group consisting of halogen, nitro, oxo, phenyl, C_1 to C_5 alkyl and C_1 to C_5 alkanoyl
or a pharmaceutically acceptable acid addition salt thereof.

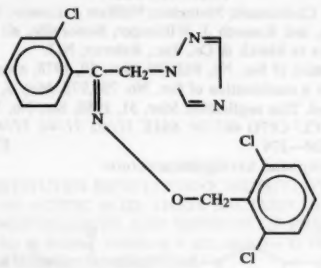
4,309,434

COMBATING FUNGI WITH 1-(2-CHLOROPHENYL)-1-(2-CHLOROBENZYLOXIMINO)-2-(1,2,4-TRIAZOL-1-YL)-ETHANE

Wolfgang Krämer; Karl H. Büchel; Helmut Timmler, all of Wuppertal; Wilhelm Brandes, Leichlin, and Paul-Ernst Frohberger, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 22,913, Mar. 22, 1979, Pat. No. 4,264,772. This application Mar. 28, 1980, Ser. No. 135,380
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1978, 2816817
Int. Cl.³ A01N *43/64*; C07D *249/08*
U.S. Cl. 424—269 **3 Claims**

1. 1-(2-Chlorophenyl)-1-(2,6-dichlorobenzyl-oximino)-2-(1,2,4-triazol-1-yl)-ethane of the formula



or a salt thereof with a physiologically acceptable acid or a metal salt complex thereof.

3. A method of combating fungi which comprises applying to the fungi, or to a habitat thereof, a fungicidally effective amount of a compound according to claim 1.

4,309,435

ANTISECRETORY GUANIDINE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Tobias O. Yellin, Wallingford, Pa., and David J. Gilman, Macclesfield, England, assignors to Imperial Chemical Industries Ltd., London, England and ICI Americas Inc., Wilmington, Del.

Filed Oct. 10, 1979, Ser. No. 83,361
Claims priority, application United Kingdom, Oct. 16, 1978, 40704/78
Int. Cl.³ C07D *277/20, 285/08*
U.S. Cl. 424—269 **11 Claims**

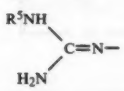
1. A guanidine derivative of the formula I:

$$Het^1\text{-}(CH_2)_m\text{-}Y^1\text{-}(CH_2)_n\text{-}NR^1\text{-}A\text{-}NR^2\text{-}(CH_2)_q\text{-}Y^2\text{-}(CH_2)_p\text{-}Het^2 \qquad I$$

in which
Y^1 and Y^2, which may be the same or different, are oxygen or sulphur atoms, direct bonds or methylene or sulphinyl radicals;
m and p, which may be the same or different, are 0 to 4 and
n and q, which may be the same or different, are 1 to 4,
provided that when Y^1 or Y^2 is an oxygen or sulphur atom or a sulphinyl radical, m or p respectively is 1 to 4 and provided that when Y^1 or Y^2 is an oxygen atom or a sulphinyl radical, n or q respectively is 2 to 4;
one of R^1 and R^2 is a hydrogen atom and the other is a hydrogen atom or an alkyl radical of 1 to 6 carbon atoms;
A is a 3,4-dioxocyclobuten-1,2-diyl radical or a radical of the formula C=Z in which Z is a sulphur or oxygen atom or a radical of the formula NCN, NNO_2, $CHNO_2$, $NCONH_2$, $C(CN)_2$, $NCOR^3$, NCO_2R^3, NSO_2R^3 or NR^4 in which R^3 is an alkyl radical of 1 to 6 carbon atoms, an aryl radical of 6 to 12 carbon atoms or an alkylphenyl radical of 7 to 12 carbon atoms and R^4 is a hydrogen atom or an alkyl radical of 1 to 6 carbon atoms; or when R^1 and R^2 are both hydrogen atoms -A- represents a radical of the formula II:

$$-A^1\text{-}E^1\text{-}G\text{-}E^2\text{-}A^2\text{-} \qquad II$$

in which A^1 and A^2, which may be the same or different, are 3,4-dioxocyclobuten-1,2-diyl radicals or radicals of the formula $C{=}Z^1$ and $C{=}Z^2$ respectively in which Z^1 and Z^2, which may be the same or different, have one of the values given above for Z; E^1 and E^2, which may be the same or different, are oxygen or sulphur atoms or NH radicals optionally substituted by alkyl radicals of 1 to 10 carbon atoms, alkenyl or alkynyl radicals of 3 to 10 carbon atoms in which the double or triple bond respectively is separated from the nitrogen atom to which the radical is attached by at least one carbon atom, cycloalkyl radicals of 3 to 8 carbon atoms, (primary hydroxy)alkyl radicals of 2 to 6 carbon atoms, alkoxyalkyl radicals of 3 to 10 carbon atoms in which the oxygen atom is separated from the nitrogen atom to which the radical is attached by at least two carbon atoms, or alkylamino or dialkylamino radicals of 3to 10 and 4 to 10 carbon atoms respectively in which the nitrogen atom is separated from the nitrogen atom to which the radical is attached by at least two carbon atoms; and G is an alkylene radical of 2 to 12 carbon atoms, an alkenylene or alkylene radical of 4 to 12 carbon atoms in which the double and triple bonds respectively are separated from E^1 and E^2 by at least one carbon atom, or a hydroxyalkylene radical of 3 to 12 carbon atoms in which the hydroxy substituent is carried on a carbon atom which is separated from E^1 and E^2 by at least one carbon atom;
Het^1 is an oxazol-4-yl, thiazol-4-yl or imidazol-4-yl radical substituted in the 2-position by a radical of the formula III:



III

or Het^1 is a 1,2,4-thiadiazol-3-yl or 1,2,4-oxadiazol-3-yl radical substituted in the 5-position by a radical of the formula III, in which R^5 is a hydrogen atom, an alkyl radical of 1 to 10 carbon atoms, an alkanoyl radical of 1 to 6 carbon atoms or an aroyl radical of 7 to 11 carbon atoms;
Het^2 is independently one of the values given above for Het^1;
provided that when R^1 and R^2 are both hydrogen atoms and A is C=NH, Y^1 and/or Y^2 is a sulphur atom;
and the pharmaceutically-acceptable acid-addition salts thereof.

4,309,436

3'(3,5-DICHLOROPHENYL)-SPIRO(3-OXABICYCLOC[3.1.0]HEXANE)-6,5'-OXAZOLIDINE-2',4'-DIONE

Wolfgang Eckhardt, Lörrach, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

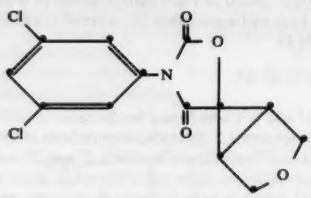
Filed Jun. 23, 1980, Ser. No. 161,985

Claims priority, application Switzerland, Jun. 27, 1979, 5995/79; Jun. 3, 1980, 4285/80

Int. Cl.³ A61K *31/42*; C07D *263/24*

U.S. Cl. 424—272 **3 Claims**

1. The compound of the formula



2. A method of controlling and preventing attck by phytopathogenic microorganisms at a locus, which comprises applying to said locus a microbicidally effective amount of the compound according to claim 1.

4,309,437

PYRROLO-BENZODIAZEPINE COMPOUNDS AND ANTI-TUMOR COMPOSITION THEREOF

Yasuo Ueda, Hirakata; Yoshio Kagitani, Kashiwara; Eiji Sako, Osaka; Tadakazu Suyama, Ianabemachi; Nobuhiko Komatsu, Tokyo, and Daisuke Satoh, Nishinomiya, all of Japan, assignors to The Green Cross Corporation, Kyoto, Japan

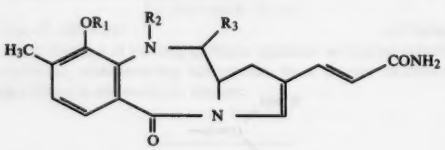
Filed Mar. 4, 1980, Ser. No. 127,984

Claims priority, application Japan, Jul. 17, 1979, 54-89886

Int. Cl.³ A61K *31/55*; C07D *487/04*

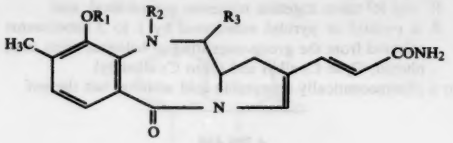
U.S. Cl. 424—274 **28 Claims**

1. A 1H-pyrrolo[2,1-c][1,4]benzodiazepin-2-acrylamide compound represented by the formula



wherein R_1 represents a hydrogen atom, alkanoyl group having 1 to 6 carbon atoms, benzoyl group, phenylcarbamyl group, alkyl carbamyl group having 1 to 6 carbon atoms, or alkoxycarbonyl group wherein the alkoxy portion has 1 to 6 carbon atoms, R_2 represents a hydrogen atom, an alkanoyl group having 1 to 6 carbon atoms or a benzoyl group, and R_3 represents a sulfinic acid residue, SO_2X, or sulfonic acid residue, SO_3X, wherein X is hydrogen or a pharmaceutically acceptable cation.

28. A anti-tumer composition comprising a carrier and an anti-tumer effective amount of a 1H-pyrrolo[2,1-c][1,4]benzodiazepin-2-acrylamide compound represented by the formula



wherein R_1 represents a hydrogen atom, alkanoyl group having 1 to 6 carbon atoms, benzoyl group, phenylcarbamyl group, alkylcarbamyl group having 1 to 6 carbon atoms, or alkoxycarbonyl group wherein the alkoxy portion has 1 to 6 carbon atoms, R_2 represents a hydrogen atom, an alkanoyl group having 1 to 6 carbon atoms or a benzoyl group, and R_3 represents a sulfinic acid residue, SO_2X, or sulfonic acid residue, SO_3X, wherein X is hydrogen or a pharmaceutically acceptable cation.

4,309,438

N-ALKYL-N-IMINOMETHYL DERIVATIVES OF THIENAMYCIN

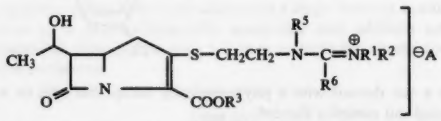
Burton G. Christensen, Metuchen; William J. Leanza, Berkeley Heights, and Kenneth J. Wildonger, Somerville, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 962,346, Nov. 20, 1978, abandoned, which is a continuation of Ser. No. 793,975, May 5, 1977, abandoned. This application Mar. 31, 1980, Ser. No. 135,574

Int. Cl.³ C07D *487/04*; A61K *31/40, 31/44, 31/425*

U.S. Cl. 424—274 **17 Claims**

1. A compound having the structure:



wherein A is a pharmaceutically acceptable counter ion; R^5 is a member selected from the group consisting of loweralkyl, loweralkenyl, and benzyl; R^6 is a member selected from the group consisting of hydrogen, loweralkyl, loweralkenyl, loweralkylthio, phenyl, pyridyl, thiazolyl and $—NR^1R^2$; R^1 and R^2 independently are members selected from the group consisting of hydrogen, lower alkyl, loweralkenyl, cycloloweralkyl, mono- and di-loweralkylamino, phenyl and benzyl; and R^3 is a member selected from the group consisting of hydrogen and pivaloxymethyl.

17. An antibacterial pharmaceutical composition consisting essentially of in unitary dosage form a therapeutically effective amount of a compound according to claim 1 and a pharmaceutical carrier therefor.

4,309,439

SUBSTITUTED-ACETIC ACID ESTER

Nobuo Ohno, Toyonaka; Isao Ohno, Kawanishi; Toshio Nishioka, Takarazuka; Hisami Takeda, Takarazuka, and Kiyoshi Kasamatsu, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

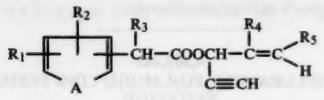
Division of Ser. No. 728,840, Oct. 1, 1976, Pat. No. 4,091,111. This application Feb. 28, 1978, Ser. No. 882,155

Claims priority, application Japan, Oct. 21, 1975, 50-127168

Int. Cl.³ A61K *31/235, 31/60*; C07C *69/614*; C07D *323/02*

U.S. Cl. 424—282 **10 Claims**

1. A compound of the formula:



wherein A is —CH=CH—; R_3 is a C_2–C_4 alkyl, C_2–C_4 alkenyl, propargyl, cyclo C_3–C_6 alkyl or cyclopropylmethyl group; R_4 is hydrogen or a halogen atom, methyl or ethyl group; R_5 is allyl, propargyl, 3-butenyl, 3-butynyl, phenyl or benzyl group; and R_1 and R_2 are each hydrogen, C_1–C_4 alkoxy, cyano, methylthio, or C_1–C_4 alkoxycarbonyl group, provided that R_1 and R_2 cannot both be hydrogen, or R_1 and R_2, taken together, may form methylenedioxy.

9. An insecticidal and/or acaricidal composition comprising an insecticidally or acaricidally effective amount of a compound according to claim **1** and an inert carrier.

4,309,440

SUBSTITUTED BENZYLIDENE METHYLHYDRAZIDES OF ACETIC ACID, THEIR BACTERICIDAL AND FUNGICIDAL USE, AND METHOD OF PREPARATION

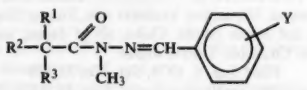
Charles A. Wilson, Pittsburg, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 28, 1980, Ser. No. 210,996

Int. Cl.[3] **A01N** *37/28, 37/34;* **C07C** *109/08, 121/82*

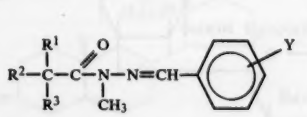
U.S. Cl. 424—304 **6 Claims**

1. A substituted benzylidene methylhydrazide of acetic acid compound corresponding to the formula



wherein R^1, R^2 and R^3 each independently represent hydrogen, chloro or bromo with the proviso that at least one of R^1, R^2 or R^3 is always chloro or bromo; Y represents hydrogen, chloro, bromo, nitro, or cyano.

3. A method for the kill and control of bacteria and fungi which comprises applying to said bacteria and fungi or their habitat an antimicrobially effective amount of a substituted benzylidene methylhydrazide of acetic acid corresponding to the formula



wherein R^1, R^2 and R^3 each independently represent hydrogen, chloro or bromo with the proviso that at least one of R^1, R^2 or R^3 is always chloro or bromo; Y represents hydrogen, chloro, bromo, nitro, or cyano in admixture with an inert adjuvant.

4,309,441

13-THIAPROSTAGLANDIN DERIVATIVES

Hans-Eckart Radunz; Dieter Orth; Manfred Baumgarth; Hans-Jochen Schliep, and Hans-Joachim Enenkel, all of Darmstadt, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

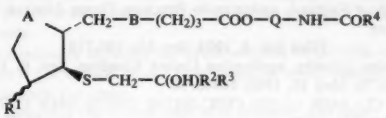
Continuation-in-part of Ser. No. 837,975, Sep. 29, 1977. This application Nov. 21, 1979, Ser. No. 96,348

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1976, 2644972

Int. Cl.[3] **C07C** *177/00;* **A61K** *31/557*

U.S. Cl. 424—305 **11 Claims**

1. Compounds of the formula



wherein A is —CO— or —CHOH—; B is $—CH_2CH_2—$ or —CH=CH—; Q is 1,4-phenylene or 1,4-naphthylene; R^1 is H or OH; R^2 is H or CH_3; R^3 is alkyl of 1–8 carbon atoms or alkyl of 1–8 carbon atoms substituted by (a) phenyl, (b) phenyl substituted by at least one of CH_3, F, Cl, Br, OH, OCH_3 or CF_3, (c) phenoxy or (d) phenoxy substituted by at least one of CH_3, F, Cl, Br, OH, OCH_3 or CF_3; and R^4 is NH_2, CH_3, phenyl, p-acetylaminophenyl, p-benzoylaminophenyl or phenylamino.

4,309,442

METHOD FOR CONTROLLING FERTILITY IN MAMMALS

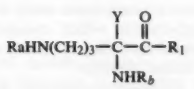
Philippe Bey, Strasbourg, and Michel Jung, Illkirch Graffenstaden, both of France, assignors to Merrell Toraude et Compagnie, Strasbourg, France

Continuation-in-part of Ser. No. 58,476, Jul. 18, 1979, abandoned, which is a continuation-in-part of Ser. No. 814,765, Jul. 11, 1977, abandoned. This application Dec. 3, 1980, Ser. No. 212,473

Int. Cl.[3] **A61K** *31/195*

U.S. Cl. 424—319 **8 Claims**

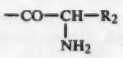
1. A method of preventing gestation in mammals which comprises the administration to said mammals of a contragestationally effective amount of a compound of the formula:



wherein:

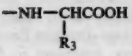
Y is FCH_2—, F_2CH—, or F_3C—;

R_a and R_b are, independently, hydrogen, $(C_1$–$C_4)$alkylcarbonyl, or the group



wherein R_2 is hydrogen, $(C_1$–$C_4)$ alkyl, benzyl, or p-hydroxybenyl;

R_1 is hydroxy, $(C_1$–$C_8)$ alkoxy, the group $—NR_4R_5$, wherein R_4 and R_5 are, independently, hydrogen, or, $(C_1$–$C_4)$alkyl, or the group



wherein R_3 is hydrogen, (C_1–C_4) alkyl, benzyl, or p-hydroxybenzyl; and the pharmaceutically acceptable salts and individual optical isomers thereof.

4,309,443

CINNAMIC ACID DERIVATIVES, THEIR PREPARATION, AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

David G. Smith, Redhill, and Anthony T. Ainsworth, Cranleigh, both of England, assignors to Beecham Group Limited, England

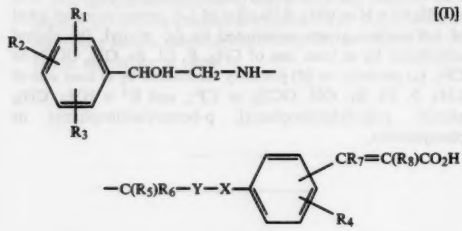
Filed Sep. 3, 1980, Ser. No. 183,715

Claims priority, application United Kingdom, Sep. 6, 1979, 31006/79; May 16, 1980, 16348/80

Int. Cl.[3] **A61K** *31/195;* **C07C** *101/30, 103/26;* **A61K** *31/165*

U.S. Cl. 424—319 **17 Claims**

1. A compound of the formula:



[(I)]

or a pharmaceutically acceptable ester, amide, or salt thereof wherein R_1 is hydrogen, fluoro, chloro, bromo, hydroxy, hydroxymethyl, methyl, methoxy, amino, formamido, acetamido, methylsulphonylamido, nitro, benzyloxy, methylsulphonylmethyl, ureido, trifluoromethyl or p-methoxybenzylamino;

R_2 is hydrogen, fluoro, chloro, bromo, or hydroxy;

R_3 is hydrogen, chloro, bromo or hydroxy;

R_4 is hydrogen, chloro, fluoro, methyl, methoxy, hydroxy or carboxylic acid or a salt, ester or amide thereof;

R_5 is hydrogen or methyl;

R_6 is hydrogen or methyl;

R_7 is hydrogen, methyl or ethyl;

R_8 is hydrogen, methyl or ethyl;

X is oxygen or a carbon-carbon bond, and

Y is alkylene of up to 5 carbon atoms, or a carbon-carbon bond.

15. A pharmaceutical composition useful in the treatment of obesity or hyperglycuemia which comprises an effective amount of a compound according to claim 1 and a pharmaceutically acceptable carrier therefor.

4,309,444

BIOLOGICALLY ACTIVE AMIDES

Eugene M. Grivsky, Chapel Hill, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Continuation of Ser. No. 916,277, Jun. 16, 1978, abandoned, which is a continuation-in-part of Ser. No. 712,318, Aug. 6, 1976, abandoned, which is a continuation-in-part of Ser. No. 811,892, Jun. 30, 1977, abandoned. This application Mar. 10, 1980, Ser. No. 129,126

Claims priority, application United Kingdom, Feb. 3, 1976, 04169/76

Int. Cl.[3] **A61K** *31/165*

U.S. Cl. 424—324 **4 Claims**

1. The method of treating or prophylaxis for convulsions in a mammal comprising the administration to said mammal of an anticonvulsant effective, non-toxic amount of a compound of trans3-chloro-N-isobutylcinnamamide.

4,309,445

D-FENFLURAMINE FOR MODIFYING FEEDING BEHAVIOR

Richard J. Wurtman, and Judith J. Wurtman, both of Boston, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jun. 16, 1980, Ser. No. 159,549

Int. Cl.[3] **A61K** *31/13*

U.S. Cl. 424—325 **2 Claims**

1. A method for treating human patients having the syndrome of abnormal carbohydrate craving between meals which consists of administering to said patient a unit dosage form of a composition which comprises between about 5 mg and 100 mg per day of an active composition comprising the dextro optically active isomer of 1-(meta-trifluoromethylphenyl)-2-ethylaminopropane or a physiologically acceptable salt thereof in admixture with an inert non-toxic carrier.

4,309,446

5-(DIHYDROXYPHENOXY)TETRAZOLES AND USE AS SWEETENERS FOR MEDICAL COMPOSITIONS

William L. Garbrecht, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Feb. 22, 1980, Ser. No. 123,859

Int. Cl.[3] **A61K** *47/00;* **C07D** *257/04*

U.S. Cl. 424—358 **7 Claims**

1. A mixture of 5-(2,3-dihydroxyphenoxy)-1H-tetrazole and 5-(2,6-dihydroxyphenoxy)-1H-tetrazole or the nontoxic, physiologically acceptable salts thereof.

5. A composition comprising

a. a medicinal substance and

b. 5-(2,3-dihydroxyphenoxy)-1H-tetrazole, or a mixture of 5-(2,3-dihydroxyphenoxy)-1H-tetrazole and 5-(2,6-dihydroxyphenoxy)-1H-tetrazole, or a nontoxic, physiologically acceptable salt thereof, said compound, mixture, or salt being present in an amount sufficient to impart a desired degree of sweetness to the composition.

4,309,447

SKIN-PROTECTING COSMETIC COMPOSITION

Hisao Tsutsumi, Miyashiro; Yoshiaki Abe, Tokyo; Shigeo Inoue, Ichikai, and Atsuo Ishida, Chiba, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

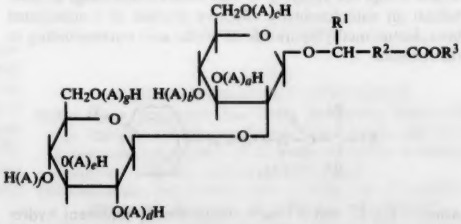
Filed Sep. 6, 1979, Ser. No. 73,135

Claims priority, application Japan, Sep. 29, 1978, 53-120272

Int. Cl.[3] **A61K** *7/48*

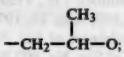
U.S. Cl. 424—361 **3 Claims**

1. A skin protecting cosmetic composition in emulsion or solution form of from 0.1 to 100% of a hydroxypropyl-etherified glycolipid ester represented by the formula:



wherein R^1 represents methyl or hydrogen; R^2 represents a saturated or unsaturated hydrocarbon group having carbon atoms of 11 to 15 when R^1 is methyl, or a saturated or unsatu-

rated hydrocarbon group having carbon atoms of 12 to 16 when R^1 is a hydrogen atom; A represents the Group



R^3 represents a saturated or unsaturated hydrocarbon group having carbon atoms of 1 to 20 or—$(A)_hH$; and a, b, c, e, d, f, g and h are each integers, whose sum ranges from 1 to 60, as the oil component, in an aqueous vehicle.

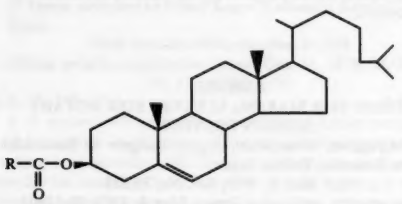
4,309,448

BRANCHED FATTY ACID CHOLESTEROL ESTER AND A COSMETIC COMPOSITION CONTAINING THE SAME

Naotake Takaishi; Kouichi Urata, both of Ichikai; Yoshiaki Inamoto, Utsunomiya; Kikuhiko Okamoto, and Shuichi Tsuchiya, both of Ichikai, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Sep. 29, 1980, Ser. No. 191,825
Claims priority, application Japan, Oct. 31, 1979, 54-139788
Int. Cl.[3] A01N *25/00*; A61K *47/00*
U.S. Cl. 424—365 10 Claims

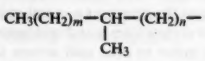
1. A branched fatty acid cholesterol ester represented by the formula (I):



(I)

where R is a saturated aliphatic hydrocarbon group selected from the group consisting of:

(1) a radical represented by the formula (III):



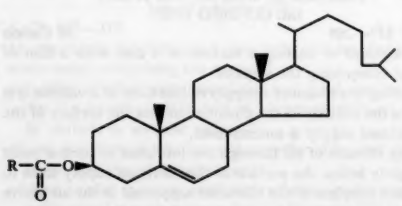
(III)

where the total of m+n is 14, and the distribution is centered about m=n=7; and

(2) a radical selected from the group consisting of 5,7,7-trimethyl-2-(1,3,3-trimethylbutyl)-octyl; 2-heptylundecyl; 2-hexyldecyl; 2-octyldodecyl and 2-pentylnonyl.

5. A cosmetic composition comprising:

a cosmetic oil; water; an emulsifier; and a branched fatty acid cholesterol ester represented by the formula (I):



(I)

where, R is a saturated aliphatic hydrocarbon group having a total of 11 to 23 carbon atoms and including at least one alkyl substituent group attached on the main chain inbetween the carboxyl-bonding position and the center of the main chain.

4,309,449

METHOD FOR PRESERVING LIVE HARD-SHELL CRABS BY FREEZING

Wayne O'Roark, 8208 Grubb Rd., and Csaba Magassy, 5454 Wisconsin Ave., both of Chevy Chase, Md. 20015

Filed Apr. 21, 1980, Ser. No. 141,938
Int. Cl.[3] A22C *29/02*; A23B *4/08, 4/10*; A23L *1/33*
U.S. Cl. 426—68 6 Claims

1. A method of preserving live hard-shell crabs by freezing comprising the steps of:

(a) washing and chilling at least one live hard-shell crab;

(b) immobilizing the pincer claws and the carapace of the crab;

(c) immersing the crab in a brine solution including a chemical defoamer, the solution being maintained at a temperature of from about −7° to 10° F., to rapidly freeze the crab;

(d) constantly agitating the brine solution to provide complete circulation of the brine solution over, around and through the crab;

(e) removing the frozen crab from solution; and then

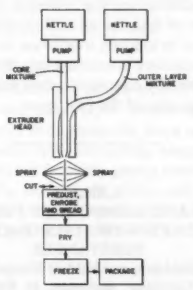
(f) dipping the frozen crab in cold water to form a thin coating of ice thereon.

4,309,450

METHOD FOR MANUFACTURING A SEAFOOD PRODUCT

Robert W. Seibert, Rte. 1, Box 57, Oxford, Md. 21654

Filed Sep. 19, 1980, Ser. No. 188,899
Int. Cl.[3] A23P *1/00*
U.S. Cl. 426—92 6 Claims



1. A method of manufacturing a seafood product, the method comprising the steps of providing a first extrudable mixture consisting predominantly of a seafood selected from the group consisting of clam and shrimp in comminuted form having a particle size of about ⅛ inch and a binder, providing a second extrudable mixture consisting predominantly of the same comminuted seafood having a particle size of about ¼ inch and a binder, extruding the mixtures simultaneously through a composite extruder head having a central extrusion orifice through which the first mixture is extruded and an annular extrusion orifice surrounding the central orifice and through which the second mixture is extruded, whereby a composite extrudate issues from the extruder head comprising a central core having a diameter of about ½ inch formed from the first mixture and an outer layer having an outer diameter of about 7/16 inch surrounding the core formed from the second mixture.

4,309,451

LIQUID ANTIMICROBIAL TREATMENT FOR STORAGE GRAIN

Frederick D. Vidal, Englewood Cliffs, and Anantharaman Jayaraman, Nutley, both of N.J., assignors to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 50,162, Jun. 20, 1979, abandoned. This application Jun. 4, 1980, Ser. No. 156,501

Int. Cl.[3] A23B *9/00*; A01N *59/00*

U.S. Cl. 426—331 4 Claims

1. A process for treating storage grain to inhibit the growth of microorganisms which comprises spraying onto the grain an effective amount of an aqueous solution of ammonium bisulfite containing an amount of sodium hexametaphosphate; the pH, and the ratio of said bisulfite to said phosphate, of said solution, being such that said phosphate is effective to substantially enhance the microorganism growth inhibiting property of said solution by comparision to an aqueous solution containing only a corresponding amount of ammonium bisulfite.

4,309,452

DUAL GLOSS COATING AND PROCESS THEREFOR

Peter R. Sachs, New Windsor, N.Y., assignor to GAF Corporation, New York, N.Y.

Filed Oct. 1, 1980, Ser. No. 192,586

Int. Cl.[3] B05D *3/06*

U.S. Cl. 427—44 8 Claims

1. Method of forming a dual gloss coating on a substrate comprising:

(a) applying to the substrate a first layer of radiation curable material and subjecting such layer to ionizing irradiation or ultraviolet light in an atmosphere containing at least about 5,000 ppm oxygen until the radiation curable material is cured except for its surface; and

(b) then applying to selected areas of the surface of the thus partially cured first layer a second layer of the same or a different radiation curable material and subjecting the second layer of material as well as at least the surface of the first layer to ionizing irradiation or ultraviolet light in an inert atmosphere containing less than about 1,000 ppm oxygen to thereby completely cure said second layer and complete the cure of the first layer.

4,309,453

PROCESS AND COMPOUNDS FOR SURFACE MODIFICATION OF MACROMOLECULAR SUBSTANCES

Roland Reiner, Eschborn, and Hildulf Kaiser, Oberursel, both of Fed. Rep. of Germany, assignors to Battelle-Institut e.V., Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 28, 1980, Ser. No. 116,308

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1979, 2902959

Int. Cl.[3] B05D *3/06*

U.S. Cl. 427—54.1 11 Claims

1. Process for covalent surface modification of a macromolecular substance comprising applying a solution of an organic monomeric compound having a hydrophobic linear chain having 1 to 26 carbon atoms, having at least one azide or diazo group at one end of said monomeric compound, and having at least one hydrophilic, hydrophobic, oleophobic and/or ionic group present at the opposite end of said monomeric compound, to the surface of said macromolecular substance and then photochemically activating said organic monomeric compound to convert said at least one azide or diazo group of said organic monomeric compound into at least one nitrene or carbene group, respectively.

4,309,454

COLLOIDAL COMPOSITIONS FOR ELECTROLESS DEPOSITION STABILIZED BY THIOUREA

Nathan Feldstein, 63 Hemlock Cir., Princeton, N.J. 08540

Division of Ser. No. 938,890, Aug. 21, 1978, Pat. No. 4,265,942, which is a continuation-in-part of Ser. No. 672,044, Mar. 30, 1976, which is a division of Ser. No. 607,506, Aug. 26, 1975, Pat. No. 3,993,799, which is a continuation-in-part of Ser. No. 512,224, Oct. 4, 1974, abandoned. This application Apr. 4, 1980, Ser. No. 137,246

Int. Cl.[3] C23C *3/02*

U.S. Cl. 427—97 18 Claims

1. A method for improving the stability of a colloidal dispersion comprising a non-precious metal and a solvent wherein said metal is catalytic for electroless metal initiation comprising the step of incorporating a compound selected from the group consisting of

$(NH_2)_2C{=}Se$, and $(NH_2)_2C{=}O$ and mixtures thereof and wherein R_1 and R_2 are selected from the group consisting of alkyl, amines, aromatics, hydrogen and halogen into said colloidal dispersion thereby improving the stability for said colloidal dispersion.

4,309,455

METHOD FOR MAKING SLEEVES FOR ROTARY SCREEN PRINTING

Takeo Miyagawa, Matsudoshi, Japan, assignor to Kabushiki Kaisha Kenseido, Tokyo, Japan

Filed May 2, 1979, Ser. No. 35,239

Claims priority, application Japan, May 4, 1978, 53-52804

Int. Cl.[3] B41N *1/24*

U.S. Cl. 204—17 8 Claims

1. A method for producing a rotary printing screen, comprising the steps of:

inserting a metal screen sleeve image supporter made by a plating process into the inside of a metal cylinder; and

immersing both said screen sleeve and said metal cylinder in a plating bath in order to coat said screen sleeve with a plated metal and simultaneously to form an image-forming layer.

4,309,456

METHOD AND APPARATUS FOR COATING RECORDED DISCS WITH A LUBRICANT

Brian E. Lock, Oakland, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 23, 1980, Ser. No. 190,079

Int. Cl.[3] B05D *1/02*

U.S. Cl. 427—209 38 Claims

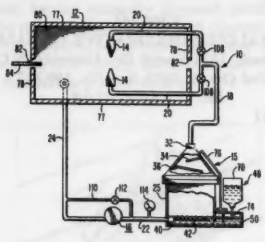
1. A method of coating a surface of a disc with a film of lubricant comprising the steps of:

providing in a chamber a supply of lubricant of a volume less than the volume of the chamber so that the surface of the lubricant supply is unrestrained,

passing streams of air through the lubricant to form a point slightly below the surface of the lubricant supply so as to create droplets of the lubricant supported in the air above the supply,

feeding additional lubricant to the chamber so as to maintain the level of the lubricant supply in the chamber at a substantially constant amount above the point that the air streams are formed,

carrying the air laden with the lubricant droplets to a nozzle, and



directing the air laden with the lubricant droplets against the surface of a disc so that the droplets impinge on and coat the surface of the disc.

4,309,457

PROCESS OF PRODUCING MULTILAYER-COATED COMPOSITE POWDER

Yoshio Kawasumi, Urawa, and Mitsuo Takahashi, Tokyo, both of Japan, assignors to Nihon Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 11, 1979, Ser. No. 84,024
Claims priority, application Japan, Oct. 16, 1978, 53/126171
Int. Cl.³ B05D *5/00*
U.S. Cl. 427—214 **9 Claims**

1. A process for producing a multilayer-coated composite powder, which comprises a first step of coating treating a starting core powder with first metallic ions and a metallic powder for reducing the first ions to thereby forming a single-layer coated powder by cementation reaction, a second step of coating treating the single-layer coated powder either with only second metallic ions other than said first metallic ions or with said second ions in the presence of a metallic powder for reducing said second ions to form a double-layer coated powder by cementation reaction, and, where necessary, an additional step of steps for repeating said second step according to the number of coating layers required.

4,309,458

PROCESS OF PRODUCING COMPOSITE POWDER COATED WITH NOBLE METAL

Yoshio Kawasumi, Urawa, and Mitsuo Takahashi, Tokyo, both of Japan, assignors to Nihon Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 11, 1979, Ser. No. 84,014
Claims priority, application Japan, Oct. 16, 1978, 53-126170
Int. Cl.³ B05D *5/00*
U.S. Cl. 427—217 **11 Claims**

11. A process of producing a composite powder coated with a noble metal comprising the steps of:

providing preliminarily granulated and sized starting powder of a metallic sulfide, carbon, activated charcoal, metallic carbide or metallic oxide,

mixing the starting powder with powder of a metal or alloy baser than the noble metal, and

adding to the mixture produced solution containing said noble metal in such manner that the funicular (II) region is reached in about 20 seconds to 10 minutes and then the slurry region is reached in 5 to 10 seconds,

whereby the starting powder particles are coated with noble metal that results from a cementation reaction.

4,309,459

PROCESS FOR PRODUCING SiO_2-COATED IRON OXIDE POWDER FOR USE IN THE PREPARATION OF ACICULAR MAGNETIC IRON OR IRON OXIDE POWDER

Yasumichi Tokuoka, Tokyo, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Nov. 25, 1980, Ser. No. 210,355
Claims priority, application Japan, Nov. 28, 1979, 54-152912
Int. Cl.³ C01G *49/02, 49/06*
U.S. Cl. 427—219 **3 Claims**

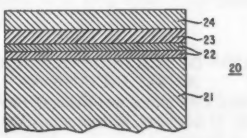
1. A process for producing SiO_2-coated iron oxide powder, for use in the preparation of acicular magnetic iron powder or acicular magnetic iron oxide powder, comprising: forming an aqueous slurry of an iron oxide selected from the group consisting of acicular goethite, acicular lepidocrosite and alpha-Fe_2O_3, having a pH of 8–14; admixing a water-soluble silicate in an amount of 0.1–10 mole percent, as SiO_2 based on Fe; charging the resultant mixture into an autoclave at 100°–250° C. for at least 5 minutes, to effect hydrothermal reaction at high pressure, the pressure in the autoclave being self-generative; and washing, filtering and drying the resulting product.

4,309,460

PROCESS FOR PRODUCING GOLD FILMS

Shobha Singh, Summit; LeGrand G. Van Uitert, Morristown, and George J. Zydzik, Columbia, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 850,775, Nov. 11, 1977, abandoned. This application Oct. 14, 1980, Ser. No. 196,477
Int. Cl.³ B05D *3/02*
U.S. Cl. 427—250 **11 Claims**



1. A process for producing a device with at least one metal layer on a surface, said metal layer consisting of at least 90 percent by weight gold comprising the steps of:

a. depositing a bonded layer consisting essentially of at least one fluoride selected from the group consisting of CdF_2, SnF_2, PbF_2, InF_3, BiF_3, AgF, GaF_3, and ZnF_2

b. thereafter evaporating the metal layer onto the fluoride layer so that the gold layer adheres directly to the fluoride layer.

4,309,461

METHOD OF COMPOUNDING DECORATIVE PRECIOUS METAL ALLOY SELECTIVELY ONTO AUSTENITE STAINLESS STEEL ARTICLE

Akira Shibata, Yokohama, Japan, assignor to Chugai-Duki Kogyo Kabushiki-Kaisha, Japan

Filed May 15, 1980, Ser. No. 150,190
Int. Cl.³ C23B *5/52*
U.S. Cl. 427—259 **5 Claims**

1. A method of overlaying an austenite stainless steel material for decorative articles and ornaments with an alloy of Au, Pt, and/or Pd bases, which comprises plating selected surfaces of the steel material with the constituents of said alloy in any desired order, and one at a time in a plurality of successive layers, and with each layer being of a thickness and volume which corresponds to the constituent ratios of the alloy of a desired purity and dimension, and heating the layers to a temperature sufficient to cause them to liquid phase alloy.

4,309,462

CONDITIONING OF CAPROLACTAM POLYMERS FOR ELECTROLESS PLATING

David A. Dillard, Diamond Bar; Eileen Maguire, Arcadia, and Lawrence P. Donovan, Temple City, all of Calif., assignors to Crown City Plating Co., El Monte, Calif.

Continuation-in-part of Ser. No. 970,929, Dec. 19, 1978, abandoned. This application Jun. 16, 1980, Ser. No. 159,503

Int. Cl.[3] B05D *3/10*

U.S. Cl. 427—304 13 Claims

1. A process for etching the surface of a caprolactam polymer substrate for electroless plating which comprises etching the caprolactam substrate with an aqueous organic acid etch solution comprising at least one organic acid compound containing 2 to 4 carbon atoms in the molecule and soluble in a concentration of at least about 3 percent by weight of solution and present in a concentration sufficient to render the caprolactam substrate uniformly and directly receptive to a metal electroless plating catalyst and depositing a metal electroless plating catalyst on the etched caprolactam polymer substrate.

4,309,463

PRODUCTION OF MOLDED POLYMER BODY WITH METAL INCLUSIONS

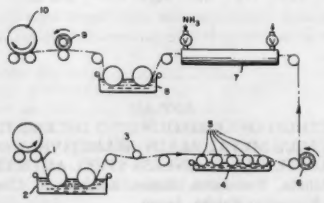
Wolfgang Lange, Obernburg, and Klaus Gerlach, Obernau, both of Fed. Rep. of Germany, assignors to Enka AG, Wuppertal, Fed. Rep. of Germany

Division of Ser. No. 14,572, Feb. 23, 1979, Pat. No. 4,244,824. This application Jun. 3, 1980, Ser. No. 156,051

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1978, 2808293

Int. Cl.[3] B05D *3/04*

U.S. Cl. 427—343 11 Claims



1. A process for the production of a molded polymer body with inclusions of fine solid particles composed of a metal, metal compound or a mixture of the same, said polymer being gas-permeable, wettable and at least surface impregnable with a liquid solvent, which process comprises the steps of:

impregnating said molded body through at least one surface thereof with a liquid solution containing a reactive metal compound; and

introducing a gaseous precipitating agent by direct gassing through the at least one impregnated surface of said molded body for reaction with said reactive metal compound to precipitate fine metal-containing particles within the molded body.

4,309,464

PERSONALIZED DECORATIVE ORNAMENT

Marshall A. Rauch, 1121 Scotch Dr., Gastonia, N.C. 28052

Filed Oct. 8, 1980, Ser. No. 195,317

Int. Cl.[3] A47G *33/08*

U.S. Cl. 428—11 8 Claims

1. A decorative ornament characterized by substantially increased effective life and by decorative ornamentation having personal significance to the user of the ornament, said ornament comprising:

(a) a three-dimensional core having a smooth exterior surface,

(b) strand material spirally wound about the smooth exterior surface of said core in individual windings disposed in side-by-side relationhip and providing a smooth outer covering for said core,

(c) a barrier coating covering said windings of strand material on said core, said barrier coating consisting of a transparent material which is chemically non-reactive with the material from which said core is formed and with said strand material and forming a sealing layer over said strand material and said core to provide a relatively smooth surface to receive decorative ornamentation thereon,

(d) a sheet of flexible, conformable material adhesively secured to said barrier coating and covering a predetermined area thereof, said sheet bearing decorative ornamentation, and

(e) an outer coating of a transparent material which provides a protective covering for the decorative ornamentation and barrier coating,

whereby the strand windings are protected from abrasion, fraying and displacement from their side-by-side arrangement and an ornament having personalized decorative ornamentation is provided.

4,309,465

PROCESS FOR MANUFACTURING THERMOPLASTIC COMPOSITIONS AND CONTAINERS MADE OF SUCH COMPOSITIONS

Simon Kornbaum, Caluire, France, assignor to Ato Chimie, Courbevoie, France

Filed Oct. 21, 1977, Ser. No. 844,310

Claims priority, application France, Oct. 29, 1976, 76 32792

Int. Cl.[3] B65D *1/00*; B32B *27/30*

U.S. Cl. 428—35 8 Claims

1. An extruded sheet-like thermoplastic material having reduced permeability comprising a continuous phase consisting essentially of polyvinyl chloride, and a discontinuous phase, consisting essentially of polyvinyl alcohol, incompatible with the polyvinyl chloride phase, wherein said discontinuous polyvinyl alcohol phase is in the form of lamellar layers distributed in the continuous polyvinyl chloride phase parallel to the surface of said sheet-like material and wherein the ratio by

weight of the polyvinyl chloride to the polyvinyl alcohol is from 100:1 to 1:1 produced by extruding a mixture of polyvinyl chloride and polyvinyl alcohol through a die defining an extrusion channel having mutually opposed parallel die surfaces wherein the ratio of the length of said channel in the direction of flow of the material being extruded to the distance between the opposed surface which determines the thickness of the sheet-like material is greater than 10.

2. The material of claim 1 wherein the K value of the polyvinyl chloride is between about 50 and about 80, the extent of hydrolysis of the polyvinyl alcohol is between about 50 and about 100%, and the viscosity of a 4% aqueous solution of the polyvinyl alcohol is between about 2 and about 70 cP.

4. A container made out of the material of claim 2.

4,309,466

FLEXIBLE LAMINATED PACKAGING MATERIAL COMPRISING METALLIZED INTERMEDIATE LAYER

Nathan Stillman, Walnut Creek, Calif., assignor to Champion International Corporation, Stamford, Conn.

Filed Dec. 17, 1979, Ser. No. 104,562

Int. Cl.[3] **B32B** *15/08, 27/08, 27/30;* **B65D** *85/72*

U.S. Cl. 428—35 **10 Claims**

1. A composite, flexible packaging film consisting essentially of an outer web of a balanced biaxially-oriented polyamide;

a middle web of metallized thermoplastic material,

an inner web of heat-sealable polyolefin; and

at least one of said outer and middle webs having a vinylidene chloride polymer coating thereon.

6. A composite, flexible packaging film according to claim 1, which is formed in two sheets; said sheets being oriented one on top of another with their inner webs facing each other, said sheets being heat-sealed at their edges to form a flexible pouch.

9. A composite, flexible packaging film consisting essentially of an outer web of balanced biaxially oriented thermoplastic material;

a middle web of metallized polyester material;

an inner web of heat-sealable polyolefin; and at least one of said outer and middle webs having a vinylidene chloride polymer coating thereon.

4,309,467

COMPOSITION FOR USE IN HIGH-TEMPERATURE HYDROGEN-FLUORINE ENVIRONMENTS AND METHOD FOR MAKING THE COMPOSITION

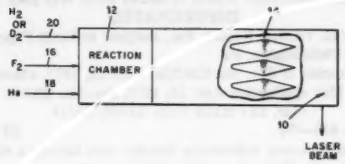
Louis Kovach, Oak Ridge, and Cressie E. Holcombe, Knoxville, both of Tenn., assignors to The United States of America as represented by Department of Energy, Washington, D.C.

Filed Aug. 22, 1980, Ser. No. 180,251

Int. Cl.[3] **C04B** *35/50, 35/58*

U.S. Cl. 428—36 **5 Claims**

1. A composition for use as a structural material in a high-temperature gaseous-fluorine containing environment, said composition consisting essentially of lanthanum hexaboride,, silicon-substituted lanthanum hexaboride and molybdenum diboride, said composition being characterized by being essentially resistant to thermal shock and corrosion from the gaseous fluorine at material surface temperatures greater than 1400° K.



4. A supersonic nozzle for a hydrogen fluoride laser system formed of the composition claimed in claim 1, said nozzle having a layer of lanthanum trifluoride containing dispersed molybdenum on surfaces thereof contacted by a high temperature stream of fluorine-containing gas.

4,309,468

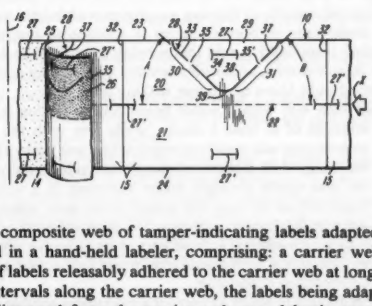
COMPOSITE LABEL WEB

George R. St. Aubin, Kettering, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Jan. 8, 1981, Ser. No. 223,442

Int. Cl.[3] **B32B** *3/10, 3/16;* **G09F** *3/00;* **B65D** *65/30*

U.S. Cl. 428—42 **15 Claims**



1. A composite web of tamper-indicating labels adapted to be used in a hand-held labeler, comprising: a carrier web, a series of labels releasably adhered to the carrier web at longitudinal intervals along the carrier web, the labels being adapted to be dispensed from the carrier web at a delaminator of a hand-held labeler, pressure sensitive adhesive releasably adhering the labels to the carrier web, means in each label defining a separable section which does not interfere with delamination of the label from the carrier web at the delaminator or application of the delaminated label to a product but which separates from the remainder of the label upon attempted removal from the product to which the label has been applied, the line of weakening which defines the separable section being spaced from the leading edge of each label to prevent a leading marginal edge of the leading label from deflecting about the delaminator, the pressure sensitive adhesive bridging the line of weakening which defines the separable section to hold the separable section to the remainder of the label until the label has been applied to the product, and the line of weakening which defines the separable section in each label having a leading portion starting with a cut through the label at the free side edge of the label and extending away from the free side edge and away from the leading edge of the label.

4,309,469

FLUSHABLE BINDER SYSTEM FOR PRE-MOISTENED WIPERS WHEREIN AN ADHESIVE FOR THE FIBERS OF THE WIPERS INTERACTS WITH IONS CONTAINED IN THE LOTION WITH WHICH THE WIPERS ARE IMPREGNATED

Eugenio G. Varona, Secane, Pa., assignor to Scott Paper Company, Philadelphia, Pa.

Continuation of Ser. No. 826,726, Aug. 22, 1977, abandoned. This application Apr. 13, 1979, Ser. No. 29,613

Int. Cl.³ B32B *7/10, 23/08, 23/14*

U.S. Cl. 428—74 **21 Claims**

1. A nonwoven, adhesively bonded web having a majority of wood pulp fibers of a papermaking length:

said web wet with a water based lotion, having a tensile strength of at least 4 oz./in. while wet with the lotion, maintaining said tensile strength while wet with the lotion for a period of at least one month and substantially losing the wet tensile strength when immersed in a volume of water at least 10 times the weight of the web,

said wet tensile strength being obtained with a cold water soluble polyvinyl alcohol adhesive having a degree of hydrolysis of from about 70% to about 90% and a degree of polymerization of at least 450;

said lotion being a water solution containing borate ions and a compound capable of forming a complex with the borate ions, wherein the amount of borate ions and complexes thereof is sufficient for forming a gel with the polyvinyl alcohol adhesive to impart a wet tensile strength to the web of at least 4 oz./in.

2. The lotion and wet web combination of claim 1 wherein the web has from about 4% to about 20% polyvinyl alcohol adhesive based upon the air-dry weight of the web and is contained in a package containing from about 100% to about 600% lotion based upon the air-dry weight of the web, said lotion containing a concentration of borate ions equivalent to a solution containing 0.5% to 1.5% boric acid at a pH in the range of from about 8.0 to 10.0, and said lotion containing a compound capable of forming a complex with borate ions; and the molar ratio of borate species in solution to the complex forming compound in said lotion being from 0.1:1 to 1.6:1.

7. A non-woven, adhesively bonded web having a majority of wood pulp fibers of a paper making length;

said web wet with a water based lotion, having a tensile strength of at least 4 oz./in. while wet with the lotion, maintaining said tensile strength while wet with the lotion for a period of at least one month and substantially losing the wet tensile strength when immersed in a volume of water at least 10 times the weight of the web, wherein said wet tensile strength is obtained with an adhesive composition which obtains at least part of its adhesive properties by interaction with borate ions in said lotion, said adhesive composition containing;

from about 5 to about 15 parts of a cold water soluble polyvinyl alcohol having a degree of hydrolysis of from about 70% to about 90% and a degree of polymerization of at least 450;

from about 1.5 to about 2.5 parts of a non-self-cross-linking, water dispersible, polymer capable of functioning as a fiber adhesive, having a molecular weight of at least 100,000, and a glass transition temperature at which an air-dried film of the polymer solids has a torsional modulus of 300 kg./cm.^{2} of from about −50° C. to about +45° C.;

from about 0.75 to about 1.25 parts of a water dispersible, self-cross-linking, polymer capable of functioning as a fiber adhesive, having a molecular weight of at least 100,000, and a glass transition temperature at which an air-dried film of polymer solids has a torsional modulus of 300 kg./cm.^{2} of from about −50° C. to about +45° C.;

said lotion being a water solution containing an active amount of borate ions for forming a gel with the polyvinyl alcohol component of the adhesive;

said web being wet with an amount of said lotion equal to at least 100% of the weight of the web.

4,309,470

METHODS AND MEANS FOR MINIMIZING FLOOR DUST PROBLEMS

Robert Neubert, Rodskovvej 51, 8543 Hornslet, Denmark

Filed Oct. 24, 1979, Ser. No. 87,764

Claims priority, application United Kingdom, Oct. 25, 1978, 42129/78

Int. Cl.³ B32B *33/00;* **G01D** *18/00*

U.S. Cl. 428—96 **5 Claims**

1. A method of indicating the location of sub-areas of a floor liable to collect relative maximum amounts of dust or other undesirable particles resulting primarily from traffic passing over the floor, for the purpose of subsequently operationally removing dust from the floor in a selective manner to generally minimize room dust problems comprising the steps of:

(a) determining the color of the dust or particles normally deposited on the floor;

(b) entirely or partially covering the floor with test mats of a mat material which are treated to have pronounced dust binding or collecting or adsorbing properties and has a color contrasting to or perceptibly different from the determined color of the dust or particles;

(c) periodically determining the color of the test mats until at least one test mat, at least locally, is determined to have changed its color;

(d) determining at least the location of the test mats or local portions thereof determined to have changed color as a result of said test mat color determining step; and

(e) removing the test mats.

4,309,471

MAGNETIC AUDIO-RECORDING TAPE

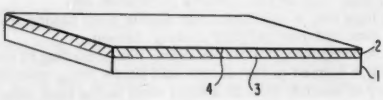
Masaaki Suzuki; Masashi Aonuma, and Yasuo Tamai, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 7, 1979, Ser. No. 46,280

Claims priority, application Japan, Jun. 7, 1978, 53/68637

Int. Cl.³ G11B *5/70*

U.S. Cl. 428—141 **7 Claims**



1. A magnetic audio-recording tape comprising a non-magnetizable flexible support and at least one magnetic coating layer provided on said support wherein (a) the support surface on which said magnetic coating layer is formed has a maximum value of an average wavelength distribution of surface roughness measured in the recording direction over the length of more than 10 mm at a wavelength of the surface roughness not less than 475 μm and at a frequency of the surface roughness not higher than 100 Hz when spectrally analyzed according to the following equation (1), and the maximum value of said wavelength distribution in the wavelength region of from 475 μm to 2.38 mm and the frequency range of from 20 Hz to 100 Hz is not higher than about 0.1 μm;

$$f = v/\lambda \quad (1)$$

wherein f is the frequency of the surface roughness in Hz, v is the relative velocity between the magnetic head and the tape in mm/sec, and λ is the wavelength of the surface roughness in mm in the recording direction, and (b) said magnetic coating layer comprises a finely divided ferromagnetic alloy material dispersed in a binder.

4,309,472

SLATS SERVING AS PROTECTION AGAINST LIGHT

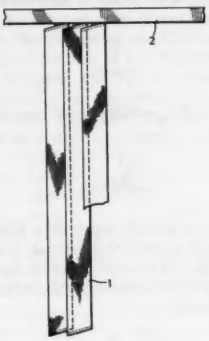
Joachim Götting, Kelkheim, and Heiner Zimmermann, Trebur, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 28, 1980, Ser. No. 154,031

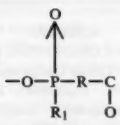
Claims priority, application Fed. Rep. of Germany, May 30, 1979, 7915593[U]

Int. Cl.³ D03D 3/00

U.S. Cl. 428—224 6 Claims



1. Slat means for protecting against light comprising a textile slat made from linear synthetic polyester fibers, said slat being stiffened permanently by heat shrinkage and containing a flame-retarding agent which consists of said polyester containing chain members having structural units of the formula



in which R is saturated, open-chain or cyclic alkylene, arylene or aralkylene and R_1 is alkyl with up to 6 carbon atoms, aryl or aralkyl, that have been incorporated into the polyester chains by condensation.

4,309,473

NON-TACKY STRAND PREPREG COMPRISING A RESIN COMPOSITION CONTAINING A COMBINATION OF (1) A THERMOSETTING RESIN AND (2) A HIGH MOLECULAR WEIGHT EPOXY RESIN AND A PROCESS FOR FORMING AN ARTICLE FROM THE SAME

Tsuyoshi Minamisawa, and Keitsugu Nohara, both of Shizuoka, Japan, assignors to Toho Beslon Co., Ltd., Tokyo, Japan

Filed Dec. 5, 1979, Ser. No. 100,614

Claims priority, application Japan, Dec. 8, 1978, 53-151105

Int. Cl.³ B32B 1/08, 7/10, 27/12, 31/20

U.S. Cl. 428—292 18 Claims

1. A flexible, non-tacky strand prepreg which comprises (i) a resin composition comprising 100 parts by weight of thermosetting resin having a softening point of about 60° C. or less and about 5 to 60 parts by weight of an epoxy resin having an average molecular weight of about 10,000 or more and (ii) about 20 to 80% by volume strands, wherein said strands are impregnated with said resin composition.

17. A process for forming an article which comprises stratifying one or more layers of a flexible non-tacky strand prepreg which comprises a resin composition comprising 100 parts by weight of thermosetting resin having a softening point of 60° C. or less and about 5 to 60 parts by weight of epoxy resin having an average molecular weight of 10,000 or more and about 20 to 80% by volume strands, wherein said strands are previously impregnated with said resin composition, and hardening the resin composition at about 80° to 600° C. and at about 1 to 100 kg/cm² pressure.

4,309,474

STRATIFICATION MASS FOR THE PRODUCTION OF TOP SURFACING LAYERS

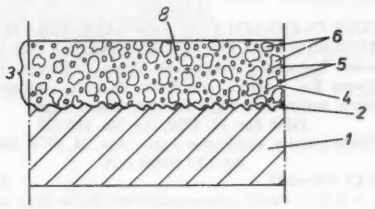
Erich Hodes, Rosbach; Danilo Sternisa, Emmindingen, and Walter Schneider, Wetzlar, all of Fed. Rep. of Germany, assignors to Glyco-Metall-Werke Daelen & Loos GmbH, Wiesbaden, Fed. Rep. of Germany

Filed Jun. 16, 1980, Ser. No. 160,127

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1979, 2928081; Jan. 17, 1980, 3001516

Int. Cl.³ B32B 5/16, 9/00, 15/00

U.S. Cl. 428—328 14 Claims



1. An anti-friction component for use in connection with sliding surfaces including:

(a) a working surface layer having anti-friction and/or friction characteristics,

(b) said component further comprising a carrier member having a metallic bonding surface to which the said working surface layer is bonded,

(c) said working surface layer comprising in combination a matrix constituted of polyvinylidene fluoride (PVDF) and lead-containing-particles imbedded in the said matrix, said lead-containing-particles having a size $\leqq 40$ μm and being provided in a ratio of volume of between 5% and 35% with respect to the volume of the said working surface layer.

4,309,475

BICOMPONENT ACRYLIC FIBER

Henry A. Hoffman, Jr., Lugoff, S.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

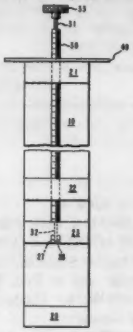
Filed Feb. 14, 1980, Ser. No. 121,462

Int. Cl.³ D02G 3/00

U.S. Cl. 428—370 2 Claims

1. A self-crimping bicomponent acrylic fiber comprising a nonhydrophilic component and a hydrophilic component in eccentric side-by-side relationship which in combination provide an equilibrium crimp reversibility (ECR) of at least about 20% wherein the hydrophilic component is a copolymer of

acrylonitrile containing 0.7 to 1.2 mol percent 2-acrylamido-2-methylpropanesulfonic acid or salts thereof having a total



ionizable group content of 180 to 270 milliequivalents per kilogram of copolymer.

4,309,476

CORE-IN-SHEATH TYPE AROMATIC POLYAMIDE FIBER AND PROCESS FOR PRODUCING THE SAME

Tsutomu Nakamura, Yamaguchi; Yasuo Nakagawa, Iwakuni; Osamu Kai, Iwakuni, and Keizo Shimada, Iwakuni, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Apr. 14, 1980, Ser. No. 140,100

Claims priority, application Japan, Apr. 24, 1979, 54-49779

Int. Cl.³ D02G *3/00*

U.S. Cl. 428—373 **7 Claims**

1. A core-in sheath type aromatic polyamide fiber, comprising a core portion comprising an aromatic polyamide material and extending along the longitudinal axis of said fiber, and a sheath portion comprising the same aromatic polyamide material as that in said core portion and surrounding said core portion, said core portion being insoluble but said sheath portion being solution in N-methyl-2-pyrrolidone at a temperature of 35° C., said fiber having been heat-treated in a dry atmosphere at a temperature of from 200° to 390° C.

4,309,477

ASBESTOS TREATMENT WITH METAL SULFIDES

Paul A. Pezzoli, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 3, 1977, Ser. No. 756,305

Int. Cl.³ D02G *3/00*

U.S. Cl. 428—378 **36 Claims**

1. A method of treating asbestos comprising depositing on at least a portion of the asbestos a material consisting essentially of at least one metal sulfide to provide an asbestos material having lower hemolytic activity than the untreated asbestos.

4,309,478

ORGANIC FIBERS HAVING IMPROVED SLIP PROPERTIES PRODUCED BY TREATMENT WITH ORGANOSILICON COMPOUNDS

Peter Huber; Peter August; Helga Lampelzammer, all of Burghausen, and Willi Primas, Simbach, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Division of Ser. No. 876,454, Feb. 9, 1978, abandoned. This application Dec. 31, 1979, Ser. No. 108,305

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1977, 2708650

Int. Cl.³ D06M *13/12, 13/18, 13/28, 13/38, 15/66*

U.S. Cl. 428—391 **7 Claims**

1. A process for improving the slipping properties of organic fibers which comprises applying to said organic fibers a polymeric organosilicon compound of the formula:

$$M_aR_bSi\{[(OSiR_2)_nD]_m(OSiR_2)_nOSiR_{3-d}M_d\}_{4-a-b}$$

wherein R is selected from the group consisting of hydrocarbon radicals and substituted hydrocarbon radicals having from 1 to 10 carbon atoms, D is a radicel of the formula

$$-X_a-A-X_a-(A-X_a)_c-,$$

where X is selected from the group consisting of

$$-\overset{\overset{O}{\|}}{C}-,$$

$$-NR'-,\ -O-,\ -S-,\ -SO_2-,\ -R''-,\ -NR'R'',$$

$$-\overset{\overset{O}{\|}}{C}R''-,$$

$-OR''-$, $-SR''-$, $-SO_2R''$, where R′ is hydrogen or R, R″ is a bivalent aliphatic hydrocarbon radical, A is selected from the group consisting of a bivalent aromatic hydrocarbon radical or substituted bivalent aromatic hydrocarbon radical, M is a radical of the formula

$$-X_a-A-X_a-(A-X_a)_c-H,$$

a is 0 or 1, b is 0, 1 or 2, c is 0 or a number of from 1 to 5, d is 0 or 1 but the same in each instance, m is 0 or a number of from 1 to 20, n is a number of from 1 to 1,000 with the proviso that at least one $-X_a-A-X_a-$A-group must be present for each molecule.

4,309,479

CONDUCTIVE COMPOSITE FILAMENTS

Tsutomu Naruse, Osaka; Takao Osagawa, Settsu; Hiroshi Naito, Osaka; Masao Matsui, Takatsuki, and Kazuo Okamoto, Osaka, all of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

Continuation of Ser. No. 931,100, Aug. 4, 1978, Pat. No. 4,216,264. This application Apr. 7, 1980, Ser. No. 138,061

Claims priority, application Japan, Aug. 8, 1977, 52-95219; Aug. 8, 1977, 52-95220

The portion of the term of this patent subsequent to Aug. 5, 1997, has been disclaimed.

Int. Cl.³ D02G *3/00*

U.S. Cl. 428—397 **15 Claims**

1. A unitary, elongated, electrically conductive, composite, melt-spun filament which in transverse cross section consists of from 2 to 8 electrically conductive segments whose inner ends are integral with each other at a common center located in the central interior portion of the filament and which radiate outwardly from said center and extend to the perimeter of the filament with the outer ends of said electrically conductive segements being exposed on the outer surface of said filament, the spaces between said electrically conductive segments outwardly from said center being filled with electrically non-conductive segments whereby said electrically conductive segments are isolated from each other except at said center and only the outer ends of said electrically conductive segments are exposed, said electrically conductive segments having an electrical resistance of less than 1×10^{13} Ω/cm and consisting

essentially of first synthetic thermoplastic fiber-forming polyamide containing uniformly dispersed therein from 3 to 40% by weight of electrically conductive carbon black, said electrically non-conductive segments consisting essentially of second synthetic thermoplastic fiber-forming polyamide which second polyamide is different from said first polyamide, said electrically non-conductive segments being continuously bonded and having full adhesion to said electrically conductive segments along the entire length of said filament, the sum of the cross-sectional areas of said electrically conductive segments being less than 50% of the total cross-sectional area of said filament and the sum of the exposed areas of said electrically conductive segments on the surface of said filament being less than 30% of the total surface area of said filament.

2. A unitary, elongated, electrically conductive, composite, melt-spun filament which in transverse cross section consists of from 2 of 8 electrically conductive segments whose inner ends are integral with each other at a common center located in the central interior portion of the filament and which radiate outwardly from said center and extend to the perimeter of the filament with the outer ends of said electrically conductive segments being exposed on the outer surface of said filament, the spaces between said electrically conductive segments outwardly from said center being filled with electrically non-conductive segments whereby said electrically conductive segments are isolated from each other except at said center and only the outer ends of said electrically conductive segments are exposed, said electrically conductive segments having an electrical resistance of less than 1×10^{13} Ω/cm and consisting essentially of first synthetic thermoplastic fiber-forming polyester containing uniformly dispersed therein from 3 to 40% by weight of electrically conductive carbon black, said electrically non-conductive segments consisting essentially of second synthetic thermoplastic fiber-forming polyester which second polyester is different from said first polyester, said electrically non-conductive segments being continuously bonded and having full adhesion to said electrically conductive segments along the entire length of said filament, the sum of the cross-sectional areas of said electrically conductive segments being less than 50% of the total cross-sectional area of said filament and the sum of the exposed areas of said electrically conductive segments on the surface of said filament being less than 30% of the total surface area of said filament.

3. A unitary, elongated, electrically conductive, composite, melt-spun filament which in transverse cross section consists of from 2 to 8 electrically conductive segments whose inner ends are integral with each other at a common center located in the central interior portion of the filament and which radiate outwardly from said center and extend to the perimeter of the filament with the outer ends of said electrically conductive segments being exposed on the outer surface of said filament, the spaces between said electrically conductive segments outwardly from said center being filled with electrically non-conductive segments whereby said electrically conductive segments are isolated from each other except at said center and only the outer ends of said electrically conductive segments are exposed, said electrically conductive segments having an electrical resistance of less than 1×10^{13} Ω/cm and consisting essentially of first synthetic thermoplastic fiber-forming polyolefin containing uniformly dispersed therein from 3 to 40% by weight of electrically conductive carbon black, said electrically non-conductive segments consisting essentially of second synthetic thermoplastic fiber-forming polyolefin which second polyolefin is different from said first polyolefin, said electrically non-conductive segments being continuously bonded and having full adhesion to said electrically conductive segments along the entire length of said filament, the sum of the cross-sectional areas of said electrically conductive segments being less than 50% of the total cross-sectional area of said filament and the sum of the exposed areas of said electrically conductive segments on the surface of said filament being less than 30% of the total surface area of said filament.

4,309,480

IRON BLUE NACREOUS PIGMENTS

Louis Armanini, Pleasantville, N.Y., assignor to The Mearl Corporation, Ossining, N.Y.

Filed Feb. 28, 1980, Ser. No. 125,653
Int. Cl.³ B32B *19/00*; C09C *1/00*
U.S. Cl. 428—403 **11 Claims**

1. An iron blue coated nacreous pigment substrate of less than 10 ppm water soluble cyanide.

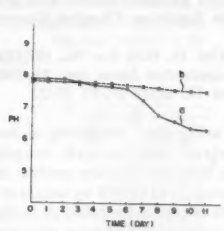
6. A method of preparing an iron blue coated nacreous pigment substrate of less than 10 ppm water soluble cyanide comprising admixing the substrate, ferric ion reactant and ferrocyanide reactant under conditions such that the ferric ion reactant and ferrocyanide reactant are always substantially in stoichiometric proportions and the pH is at a constant value within the range of 2.5–4.0, and adding an aluminum containing reactant so as to form aluminum hydroxide in addition to the iron blue on the substrate.

4,309,481

FILTER-COATED PHOSPHOR

Tadashi Wakatsuki, Yokohama, and Takeshi Takahara, Yokosuka, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 9, 1980, Ser. No. 138,510
Claims priority, application Japan, Apr. 10, 1979, 54-42537
Int. Cl.³ C09K *11/46*; H01J *29/28, 29/20*
U.S. Cl. 428—403 **8 Claims**



1. A filter-coated phosphor having phosphor particles coated with filter particles formed of pigments of the same color as that of light emitted from said phosphor, said phosphor particles coated with said filter particles being additionally coated with a borate compound wherein the weight of phosphor particles, and the weight of said borate compound coating is 0.001 to 0.3% of the weight of the phosphor compound.

4,309,482

MAGNETIC RECORDING MEDIUM

Takashi Suzuki, Takatsuki; Isao Sumita, Toyonaka, and Akihiro Imai, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 19, 1979, Ser. No. 58,917
Int. Cl.³ B32B *27/38*
U.S. Cl. 428—413 **4 Claims**

1. A magnetic recording medium comprising a thin ferromagnetic film on a base and at least one surface of said magnetic recording medium being coated with a thin film of an ultraviolet ray hardened coating, said coating before ultraviolet ray hardening consisting essentially of unreacted epoxy resin, aromatic diazonium salts of complexes of halides which form a Lewis acid when irradiated by ultraviolet rays, a gelation inhibitor and lubricant.

4,309,483

ANTI-STATIC COATING ON ULLAGE TAPES COMPRISING CARBON BLACK DERIVED FROM A RICH ACETYLENE FLAME

William H. Gravert, 21 Orchard Farm Rd., Port Washington, N.Y. 11050

Filed Sep. 24, 1979, Ser. No. 77,987
Int. Cl.³ B32B *25/02, 33/00;* G01F *23/04, 23/27*
U.S. Cl. 428—421 8 Claims

1. In an ullage measuring device for measurement of liquid in a storage tank, and being of the type having a fluid level indicating device to be lowered into the storage tank on a tape formed with an electrically non-conducting outer surface; the improvement comprising:

a permanent static electric charge removal coating applied to said outer surface to dissipate static electric charge build-up on said outer surface, said removal coating consisting essentially of carbon black.

5. A method for coating the tape of an ullage measuring device with an anti-static electric coating, comprising the steps of:

establishing an acetylene rich flame;

passing the tape in close proximity to the acetylene rich flame to deposit and anchor thereon a carbon layer; and,

removing excess carbon which is not anchored to the tape surface.

4,309,484

LAMINATED SAFETY GLASS

Tadayuki Ohmae, and Yoshinori Kanno, both of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 16, 1980, Ser. No. 197,573
Claims priority, application Japan, Apr. 22, 1980, 55-53969
Int. Cl.³ B32B *17/10, 27/32*
U.S. Cl. 428—441 3 Claims

1. A laminated safety glass comprising at least two glass plates and an interlayer, said interlayer comprising a cross-linked product of a hydration reaction product of an ethylene copolymer comprising (1) 60 to 95% by weight of ethylene, (2) 5 to 40% by weight of glycidyl acrylate or methacrylate, and (3) 0 to 20% by weight of one or more comonomer selected from the group consisting of a vinyl ester having 4 to 10 carbon atoms and an ester of acrylic or methacrylic acid with an alcohol having 1 to 12 carbon atoms wherein said hydration reaction product has a hydration rate of the epoxy group of 5 to 80% per mole and said ethylene copolymer has a melt index of 10 to 500.

4,309,485

ENAMELED STEEL PLATE

Kazuo Kondo, and Akio Takami, both of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Feb. 24, 1981, Ser. No. 237,812
Int. Cl.³ B32B *15/04, 15/16;* B05D *1/12, 3/02*
U.S. Cl. 428—457 7 Claims

1. An enameled steel plate having a linear thermal coefficient of expansion at a temperature between 30° C. and 500° C. within the range of from 100×10^{-7} to 190×10^{-7}/°C. and covered with phosphate glass or crystallized glass consisting essentially of from 40 to 75 mol % component X, from 20 to 55 mol % component Y, and from 0.1 to 10 mol % component Z, wherein

Component X is P_2O_5;

Component Y is selected from ZnO, K_2O, B_2O_3 and Al_2O_3 in an amount of up to 20 mol %, and CaO and BaO in an amount of up to 55 mol %;

Component Z is selected from SrO, Ta_2O_5, La_2O_3, CeO_2, and Nb_2O_5.

4,309,486

ELECTROSTATIC RECORDING MATERIAL

Wieland Sack, Bissendorf; Reiner Anthonsen, Bramsche, and Ferencz Kertesz, Bissendorf, all of Fed. Rep. of Germany, assignors to Felix Schoeller Jr. GmbH & Co. KG, Osnabruck, Fed. Rep. of Germany

Filed Jan. 16, 1979, Ser. No. 3,940
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1978, 2802135
Int. Cl.³ B32B *23/08, 27/10*
U.S. Cl. 428—511 14 Claims

9. An electrostatic recording material comprising an electrically conducting paper support applied thereto a dielectric coating applied thereto capable of recording an electrostatic latent image, the dielectric coating comprising a composition hardened by exposure to radiation and comprising at least one unsaturated organic compound and substantially no inert solvent.

4,309,487

LAMINATED ARMOR

Richard R. Holmes, Guntersville, Ala., assignor to Phillips Petroleum Co., Bartlesville, Okla.

Continuation of Ser. No. 754,966, Aug. 23, 1968, abandoned. This application Aug. 23, 1972, Ser. No. 282,301
Int. Cl.³ B32B *7/02*
U.S. Cl. 428—516 20 Claims

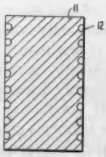
1. A laminated armor structure capable of precluding penetration of bullets and shell fragments which comprises a plurality of bonded units wherein each of said units is so positioned that the directions of orientation of adjacent units are at an angle to each other and wherein the ply of each unit is formed from a member selected from the group consisting of unidirectionally oriented olefin polymer film and unidirectionally oriented olefin polymer filament, wherein the ply of each unit is positioned so that the direction of orientation of adjacent ply is the same and wherein said units are compression-bonded in the absence of adhesives or bonding agents.

4,309,488

IMPLANTABLE BONE REPLACEMENT MATERIALS BASED ON CALCIUM PHOSPHATE CERAMIC MATERIAL IN A MATRIX AND PROCESS FOR THE PRODUCTION THEREOF

Helmut Heide, Kelkheim; Eva Poeschel, Altenhain, and Ulrich Roth, Darmstadt, all of Fed. Rep. of Germany, assignors to Battelle-Institut e.V., Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 21, 1979, Ser. No. 50,627
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1978, 2827529
Int. Cl.³ A61F *1/00, 5/04*
U.S. Cl. 428—547 15 Claims



1. In an implantable bone replacement material based on completely or partially resorbable particles incorporated in a matrix material, the particles being made of bioactive sintered calcium phosphate ceramic material having a $CaO:P_2O_5$ composition ratio between 3:1 and 4:1, the improvement comprised of the matrix material consisting of a metal containing calcium phosphate ceramic material in the form of a monolayer of

particles in the peripheral areas of the metal which serve as interfaces to the body tissue, the metal being compatible with body tissue, the ceramic particles having a size range between about 500 μm and a few millimeters, the calcium phosphate particles being located so that they are exposed on the outer surface on the metal, and the metal being noncomposite in structure and being nonlayered in that there are no distinct boundaries between any regions of the metal.

6. In an implantable bone replacement material based on completely or partially resorbable particles incorporated in a matrix material, the particles being made of bioactive sintered calcium phosphate ceramic material having a $CaO:P_2O_5$ composition ratio between 3:1 and 4:1, the improvement comprising the matrix material consisting of a solid core region of metal, and a surface region of the metal having fine-grained inclusions of calcium phosphate ceramic material, the coating having been applied to the core by spraying, the metal compatible body tissue, the surface region of the metal containing between 10 and 40 volume percent of the calcium phosphate ceramic material, and the metal being noncomposite in structure and being nonlayered in that there are no distinct boundaries between any regions of the metal.

4,309,489
FE-NI-CU-CR LAYERED BIMETAL

Kenichiro Momose, Ebina; Kiyoshi Kumagai, Yokohama, and Fumio Mori, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed May 14, 1980, Ser. No. 149,725
Claims priority, application Japan, May 14, 1979, 54-58097; Jul. 13, 1979, 54-88070
Int. Cl.³ B32B *7/00, 15/18*
U.S. Cl. 428—619 **3 Claims**

1. A corrosion resistant bimetal formed by applying together a low expansion alloy plate which consists essentially of 25–45% by weight of Ni, 2–20% by weight of Cu, 3–20% by weight of Cr and the balance of Fe, and a corrosion resistant alloy plate which has a linear expansion coefficient larger than that of said low expansion alloy plate by 5×10^{-6}/°C.

4,309,490
LONG LIFE THIONYL CHLORIDE CELL

David L. Chua, Horsham, and William C. Merz, Aldan, both of Pa., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 8, 1976, Ser. No. 731,064
Int. Cl.³ H01M *6/14*
U.S. Cl. 429—101 **4 Claims**

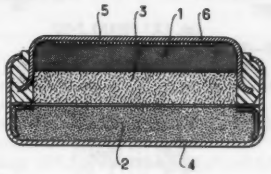
1. An electrochemical cell, comprising:
a lithium anode;
a thionyl chloride depolarizer and solvent;
an electrolyte salt comprising lithium aluminum chloride; and
a quantity of lithium chloride growth regulating sulfur dioxide admixed with said solvent in an amount such that the ratio of the moles of lithium aluminum chloride to moles of sulfur dioxide ranges from 0.9 to 1.5.

4,309,491
ELECTRIC CELL WITH A NON-AQUEOUS ELECTROLYTE

Raymond Brec, Nantes; Alain Le Mehaute, Gif sur Yvette, and Alain Dugast, Nantes, all of France, assignors to Societe Anonyme dite Compagnie Generale d'Electricite, Paris, France

Filed Aug. 26, 1980, Ser. No. 181,622
Claims priority, application France, Sep. 11, 1979, 79 22644
Int. Cl.³ H01M *4/58*
U.S. Cl. 429—112 **11 Claims**

1. A secondary electric cell which includes: a non-aqueous electrolyte; a negative electrode whose active material includes at least one alkali metal in contact with the electrolyte, and a positive electrode whose active material is suitable for intercalating the active material of the negative electrode, wherein said positive electrode includes an active compound or solid solution whose general formula is M_xX, R_yX_3 where:
M is an element chosen from the group consisting of lead and tin;
R is an element chosen from the group consisting of bismuth and antimony; and

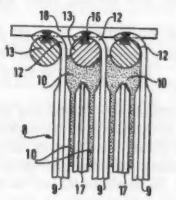


X is an element chosen from the group consisting of sulphur and selenium, with
x having a value lying between 0 and 1 (inclusive), and
y having a value lying between 0 and 2 (inclusive).

4,309,492
ELECTRIC STORAGE CELL WITH A VIBRATION-PROOF COMB-TYPE CONNECTION

Olivier Bernard, Paris, France, assignor to Saft-Societe des Accumulateurs Fixes et de Traction, Romainville, France

Filed Oct. 7, 1980, Ser. No. 194,846
Claims priority, application France, Oct. 19, 1979, 79 26066
Int. Cl.³ H01M *2/26*
U.S. Cl. 429—161 **10 Claims**

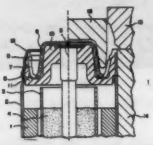


1. An electric storage cell including a housing; an electrode block lodged in the housing; the electrode block being formed by a stack of active plates of alternating positive and negative polarities and separators interposed between each pair of positive and negative plates, and each active plate having a plate lug extending therefrom, the plate lugs of all the active plates projecting from one face of the electrode block; a pair of electrical terminals extending through a wall of the housing; a pair of conductive comb-shaped members disposed within the housing, means for electrically connecting each comb to a corresponding one of the terminals; and the plate lugs of active plates of each polarity being electrically connected to respective teeth of the corresponding comb, wherein the improvement comprises:
each comb being disposed against said one face of the electrode block;
said means for electrically connecting each comb to a corresponding terminal comprising an elongated flexible element extending from the comb to the corresponding terminal; and each plate lug being flexible, being inserted between adjacent teeth of the corresponding comb, and being electrically and mechanically bonded to one of said teeth under tension, the tension in said lugs holding the combs tightly against said one face of the electrode block.

4,309,493
CLOSURE FOR GALVANIC ELEMENTS

Thomas Kühl, Eppstein, and Hans Sauer, Idstein-Walsdorf, Fed. Rep. of Germany, assignors to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Aug. 8, 1980, Ser. No. 175,828
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1979, 2941757
Int. Cl.³ H01M 2/02
U.S. Cl. 429—172 9 Claims



1. A closure arrangement for a galvanic element which includes a closure body of insulating material which is adapted to be pressed against a sealing surface by means of a resilient member wherein

the resilient member takes the form of an enveloping surface which is provided with slits in the region in which it presses against the closure body,

the portions of the member between the slits being free to move in a direction away from the closure body.

4,309,494
ELECTROCHEMICAL CELL HAVING BATTERY SEPARATOR OF ETHYLENE-VINYL ALCOHOL COPOLYMER

Richard F. Stockel, 475 Rolling Hills Rd., Bridgewater, N.J. 08807

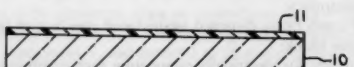
Continuation of Ser. No. 39,671, May 15, 1979, abandoned. This application May 12, 1980, Ser. No. 148,598
Int. Cl.³ H01M 2/16
U.S. Cl. 429—254 5 Claims

1. An electrochemical cell containing an aqueous electrolyte and a separator comprising a microporous sheet having a thickness of from about 5 to 50 mils. of a substantially linear copolymer consisting of ethylene-vinyl alcohol containing from about 40 wt. % to about 90 wt. % combined vinyl alcohol.

4,309,495
METHOD FOR MAKING STAINED GLASS PHOTOMASKS FROM PHOTOGRAPHIC EMULSION

Fred M. Ernsberger, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 930,291, Aug. 2, 1978, abandoned, which is a continuation-in-part of Ser. No. 856,054, Nov. 30, 1977, Pat. No. 4,155,735. This application Oct. 1, 1979, Ser. No. 80,875
The portion of the term of this patent subsequent to May 22, 1996, has been disclaimed.
Int. Cl.³ G03C 7/00
U.S. Cl. 430—5 18 Claims



1. A method of making a stained glass photomask comprising:

providing a flat glass substrate with a layer of photographic emulsion containing silver halide on a first surface of the glass substrate;

placing a master mask over the photographic emulsion layer and exposing patterned areas of the photographic emulsion to actinic radiation through the master mask;

contacting the exposed photographic emulsion with photographic developing solutions, thereby producing on the first surface of the flat glass substrate a pattern of electroconductive silver-containing emulsion areas and silver-free areas;

applying a first electrode layer onto the developed photographic emulsion on the first side of the glass substrate and applying a second electrode layer onto the glass surface on the opposite side of the glass substrate from said first surface;

connecting said first electrode layer to the anode side of a source of electrical potential, connecting said second electrode layer to the cathode side of the source of electrical potential, and simultaneously heating the glass and the layers carried thereon to a temperature between about 100° C. to 350° C. while applying a direct current electric field between the electrode layers so that electric charge passes through the silver-containing emulsion areas and the thickness of the glass substrate and induces migration of silver ions from the silver-containing emulsion areas into portions of the glass underlying the silver-containing emulsion areas while portions of the glass substrate underlying the silver-free areas remain essentially free from migrated silver ions;

maintaining the glass at an elevated temperature in the presence of a reducing agent for a sufficient time to reduce and agglomerate the migrated silver ions within the glass, thereby producing a stained pattern within the surface of the glass.

4,309,496
METHOD FOR OPTIMIZATION OF IMAGE REPRODUCTION PROCESSES

Dennis B. Miller, 1169 LaSalle Ave., Grand Island, N.Y. 14072

Filed Sep. 10, 1980, Ser. No. 186,203
Int. Cl.³ G03F 1/00
U.S. Cl. 430—30 13 Claims

1. A method for optimization of reproduction processes, including the steps of:

(1) producing, from at least one original image, a corresponding physical standard,

(2) measuring at least the density values of the filtration employed in producing the physical standard,

(3) separating the original image into a corresponding set of separate monotone images using exposure intensity values modified as a function of the filtration values employed in producing the corresponding physical standard,

(4) preparing at least one reproduction from the set of separate monotone images, and

(5) comparing a representative sampling of the reproductions with its corresponding physical standard to measure at least the average difference in density therebetween.

4,309,497
POLYESTER INTERLAYERS FOR ELECTRICALLY ACTIVATABLE RECORDING (EAR) ELEMENTS

Mark Lelental, Penfield, N.Y., and Mohammad A. Sandhu, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 13, 1980, Ser. No. 159,089
Int. Cl.³ G03G 13/00, 13/12
U.S. Cl. 430—48 34 Claims

1. In an electrically activatable recording element comprising an electrically conductive support having thereon, in sequence:

(a) a polymeric electrically active conductive layer,

(b) an electrically activatable recording layer comprising

(A) a dye-forming coupler, and

(B) an oxidation-reduction combination comprising

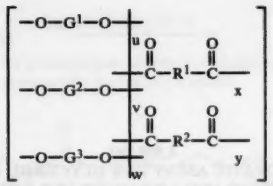
(i) an organic silver salt oxidizing agent with

(ii) a reducing agent which, in its oxidized form, forms a dye with said dye-forming coupler,

(c) a photoconductive layer separated from (b) by an air gap of up to 20 microns, and

(d) an electrically conductive layer,

the improvement wherein the polymeric electrically active conductive layer comprises a halogen containing polyester represented by the structure:



wherein:

G^1 is ethylene, a linear poly(alkyleneoxy) group containing 2 to 4 carbon atoms and having a molecular weight within the range of about 72 to about 1,000, a linear alkylene group containing 3 to 12 carbon atoms, or a substituted alkyleneoxy group;

G^2 is a branched alkylene group containing 3 to 12 carbon atoms;

G^3 is an alicyclic group;

R^1 is phenylene or halogenated phenylene;

R^2 is a linear aliphatic group containing 1 to 36 carbon atoms;

u is 20 to 100 mole percent;

v is 0 to 70 mole percent;

w is 0 to 50 mole percent;

x is 0 to 100 mole percent;

y is 100 to 0 mole percent;

the sum of u, v and w is 100 and the sum of x and y is 100 said polyester having an effective inherent viscosity and molecular weight to enable the polyester to provide increased sensitivity to said recording element.

4,309,498

ELECTROPHOTOGRAPHY USING A MAGNETIC BRUSH

Keitaro Yamashita, Kimisato; Ryuji Goto, and Masumi Asanae, both of Kumagaya, all of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Aug. 1, 1979, Ser. No. 62,844

Claims priority, application Japan, Mar. 23, 1978, 53-34044

Int. Cl.³ G03G *13/09*

U.S. Cl. 430—100 **14 Claims**

1. In a method of electrophotography where an electrostatic latent image is formed on the surface of a material layer, a non-magnetic cylinder is provided to confront said surface of said material layer, a permanent magnet roll having a plurality of symmetrically arranged magnetic poles extending axially is provided in said cylinder, a magnetic brush is formed by attracting a semiconducting or insulating magnetic toner having a volumetric resistivity greater than 10^8 Ωcm under an electric field of DC 4000 V/cm onto said cylinder with the aid of a magnetic attraction force of said permanent magnet roll, said cylinder and permanent magnet roll are moved relatively to permit said magnetic brush to slide along the surface of said material layer thereby to allow said magnetic toner to stick to a predetermined position on the surface of said material layer, and a toner image is transferred onto a transferring member and is then subjected to fixing, the improvement comprising; said permanent magnet roll having a magnetic force in the range of 400–1600 gauss rotating said cylinder and said permanent magnet roll in the same direction as the direction of movement of said magnetic toner which is moved in the same direction as that of said material layer and at a speed less than 100 mm/sec irrespective of the speed of movement of the surface of said material layer at a development section, wherein the number of revolutions per minute of said permanent magnet roll is set to a value P defined by:

$$P = V / \frac{N_M}{60} \cdot M$$

where:

N_M is the r.p.m. of said permanent magnet roll,

V is the speed of movement of the surface of said material layer, expressed by the mm/sec.,

M is the number of magnetic poles forming said permanent magnet roll, and

P is in the range of 0.2 to 2.5, the r.p.m. of said non-magnetic cylinder is in a range of 1/5 to 1/20 of the r.p.m. of said permanent magnet roll.

4,309,499

FORMATION OF BLACK-AND-WHITE SILVER-CONTAINING NEGATIVE IMAGES BY A DIFFUSION TRANSFER PROCESS

Yoshihiro Takagi, and Katsumi Hayashi, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 14, 1979, Ser. No. 94,396

Claims priority, application Japan, Nov. 14, 1978, 53/140099

Int. Cl.³ G03C *5/54*

U.S. Cl. 430—250 **11 Claims**

1. In a method of fogging black-and-white silver-containing negative images by a diffusion transfer photographic process using a black-and-white diffusion transfer photographic film unit comprising a plastic support, a silver halide photographic emulsion layer and an image-receiving layer which unit is imagewise exposed, the improvement which comprises subsequent processing in a single processing solution comprising a solvent for the silver halide, a foggant, a developing agent and a fogging promoting agent, whereby an optically negative image develops in said image-receiving layer, said silver halide photographic emulsion being an internal latent image type emulsion having no surface fog centers, and said silver halide solvent having a solubility for silver bromide as a 0.02 molar aqueous solution of about 2×10^{-5} to 5 a 10^{-3} mol/l at 60° C. and at the developing pH.

8. The method of claim 1, wherein said developer is a dihydroxybenzene, a 3-pyrazolidone, an aminophenol, a hydroxyamine, or a mixture thereof.

4,309,500

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Tadao Shishido, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

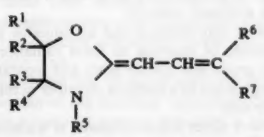
Continuation-in-part of Ser. No. 874,086, Feb. 1, 1978, abandoned. This application May 21, 1979, Ser. No. 40,822

Claims priority, application Japan, Feb. 4, 1977, 52-11366

Int. Cl.³ G03C *1/84*

U.S. Cl. 430—507 **10 Claims**

1. A silver halide color photographic light-sensitive material which contains at least one color image-forming compound, an ultraviolet light absorbing amount of at least one compound represented by the following general formula (I):



(I)

wherein R^1, R^2, R^3 and R^4, which may be the same or different, each represents a hydrogen atom or an aliphatic group selected from the group consisting of a straight chain or branched chain alkyl group having 1 to 18 carbon atoms, an alkenyl group having 3 to 10 carbon atoms and a substituted alkyl group having 1 to 20 total carbon atoms and substituted with one or more of a hydroxy group, an aryl group, a carboxy group, a sulfo group and an alkoxycarbonyl group; R^5 represents an aliphatic group selected from the group consisting of a straight chain or branched chain alkyl group having 1 to 20 carbon atoms, an alkenyl group having 3 to 10 carbon atoms and a substituted alkyl group having 1 to 20 total carbon atoms and substituted with one or more of the substituents as described above for the substituted alkyl group for R^1 to R^4, or an aromatic group; R^6 represents a cyano group and R^7 represents a cyano group, a —COR^8, A—$COOR^8$ group group or a —SO_2R^9 group; and R^8 represents an aliphatic group and R^9 represents an aliphatic group or an aromatic group wherein the aromatic group represented by R^5 or R^9 is an aryl group having 6 to 20 carbon atoms which may be substituted with one or more of an alkyl group, an alkoxy group and a halogen atom and wherein the aliphatic group represented by R^8 or R^9 is a straight chain or branched chain alkyl group having 1 to 20 carbon atoms, an alkenyl group having 3 to 20 carbon atoms or a substituted alkyl group having 1 to 20 total carbon atoms substituted with one or more of the substituents as described above for the substituted alkyl group for R^1 to R^4, said compound of the formula (I) having an absorption maximum at about 360 to 375 mμ and being capable of absorbing ultraviolet light of a wavelength of about 300 mμ to 400 mμ with substantially no absorbance of visible light.

4,309,501

CRYSTALLIZATION PROCESS

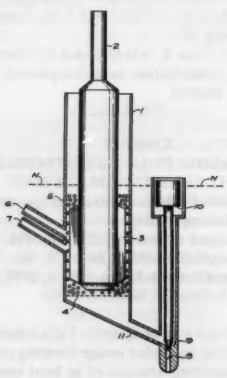
Albert P. Huguenard, Le Plessis Trevise, and Michel J. Favre, Chantilly, both of France, assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 857,733, Dec. 5, 1977, Pat. No. 4,263,011. This application Jul. 9, 1980, Ser. No. 167,163

Claims priority, application France, Dec. 9, 1976, 76 37070

Int. Cl.³ G03C *1/02*

U.S. Cl. 430—569 **11 Claims**



1. In a process of continuously preparing a radiation-sensitive silver halide emulsion wherein

an aqueous silver salt solution and an aqueous halide salt solution capable of reacting to form radiation-sensitive silver halide grains are concurrently and separately introduced through inlets to a reaction chamber in the presence of a peptizer and

radiation-sensitive silver halide emulsion is withdrawn at an outlet from the reaction chamber while silver halide grain formation is occurring under steady state operating conditions

the improvement comprising

reacting the silver salt and the halide salt within the reaction chamber in the presence of the peptizer in a bed of small, inert, continuously moving solid particles.

4,309,502

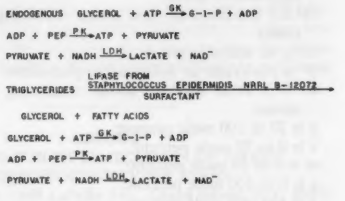
ENZYMATIC ASSAY FOR GLYCEROL AND TRIGLYCERIDES AND A REAGENT FOR USE THEREIN

Vivian R. Lauderdale, Encinitas, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jun. 30, 1980, Ser. No. 164,720

Int. Cl.³ C12Q *1/48, 1/44*

U.S. Cl. 435—15 **19 Claims**


ENDOGENOUS GLYCEROL + ATP GK G-1-P + ADP
ADP + PEP PK ATP + PYRUVATE
PYRUVATE + NADH LDH LACTATE + NAD⁻
TRIGLYCERIDES LIPASE FROM STAPHYLOCOCCUS EPIDERMIDIS NRRL B-12072 SURFACTANT
GLYCEROL + FATTY ACIDS
GLYCEROL + ATP GK G-1-P + ADP
ADP + PEP PK ATP + PYRUVATE
PYRUVATE + NADH LDH LACTATE + NAD⁻

1. A kit for use in analysis of endogenous glycerol and triglycerides in a sample to be assayed comprising in association:

(a) a lipase from *Staphylococcus epidermidis* NRRL B-12072;

(b) glycerol kinase;

(c) adenosine triphosphate;

(d) at least one reagent capable of being used to assay glycerol-1-phosphate or adenosine diphosphate formed in the glycerol kinase reaction, wherein said reagent, adenosine triphosphate, glycerol kinase and said lipase from *Staphylococcus epidermidis* NRRL B-12072 are present in any preselected distribution in one or more vials; and

(e) a surfactant, present in a separate vial, capable of activating said lipase from *Staphylococcus epidermidis NRRL B*-12072.

17. An assay of endogenous glycerol and triglycerides in a sample to be assayed comprising:

(a) performing reactions which comprise:

(i) reacting said endogenous glycerol with adenosine triphosphate in the presence of glycerol kinase to form glycerol-1-phosphate and adenosine diphosphate;

(ii) determining the amount of endogenous glycerol by measuring the amount of one of said reaction products of step (i);

(iii) adding to said reaction medium a surfactant capable of activating a lipase from *Staphylococcus epidermidis* NRRL B-12072 said lipase being added to said reaction medium prior to the addition of said surfactant thereto;

(iv) reacting triglycerides in the presence of said activated lipase to form glycerol and free fatty acids;

(v) reacting said glycerol formed in step (iv) with adenosine triphosphate in the presence of glycerol kinase to form glycerol-1-phosphate and adenosine;

(vi) determining the amount of triglyceride by measuring the amount of one of said reaction products of step (v).

4,309,503

PREPARATION OF 11-DEOXY ANTHRACYCLINE ANTIBIOTICS

Giuseppe Cassinelli, Pavia; Arpad Grein, Milan; Sergio Merli, Milan, and Giovanni Rivola, Milan, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

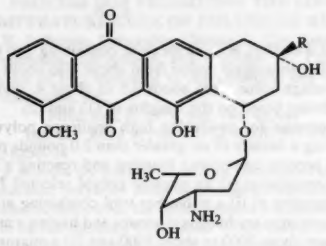
Division of Ser. No. 9,650, Feb. 5, 1979, Pat. No. 4,247,545. This application Oct. 5, 1979, Ser. No. 82,294

Claims priority, application United Kingdom, Feb. 17, 1978, 5246/78

Int. Cl.³ C12P *19/56*

U.S. Cl. 435—78 6 Claims

1. A process for producing an antibiotic complex including a mixture of the compounds having the formula:



wherein R is —CO—CH_2OH, —CHOH—CH_3, —CO—CH_3 or —CH_2—CH_3 and a salt thereof, said process comprising cultivating the microorganism *Micromonospora peucetica* sp. nova under aerobic conditions in an aqueous culture medium containing an assimilable source of carbon, an assimilable source of nitrogen and mineral salts and recovering said antibiotic complex from the culture medium.

6. A biologically pure culture of the microorganism *Micromonospora peucetica* sp. *nova*, having the identifying characteristics of ATCC 31366, said culture being capable of producing anthracycline antibiotics in recoverable quantities.

4,309,504

PROCESS FOR PREPARING NARASIN

Ralph E. Kastner, Indianapolis, and Robert L. Hamill, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jan. 28, 1980, Ser. No. 115,656

Int. Cl.³ C12P *17/16*

U.S. Cl. 435—118 4 Claims

1. The method of producing the antibiotic narasin which comprises cultivating *Streptomyces lydicus* DeBoer et al., NRRL 12034, or a narasin-producing mutant or variant thereof, in a culture medium containing assimilable sources of carbohydrate, nitrogen, and inorganic salts under submerged aerobic fermentation conditions until a substantial amount of antibiotic activity is produced by said organism in said culture medium.

4. A biologically pure culture of the microorganism *Streptomyces lydicus* DeBoer et al., NRRL 12034, which is capable of producing narasin in a recoverable quantity upon cultivation in a culture medium containing assimilable sources of carbohydrate, nitrogen, and inorganic salts under submerged aerobic fermentation conditions.

4,309,505

PROCESS FOR THE PRODUCTION OF FRUCTOSE TRANSFERASE ENZYME

Jay A. Smith, Downers Grove, and Susan J. Luenser, LaGrange Park, both of Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed May 19, 1980, Ser. No. 150,843

Int. Cl.³ C12N *9/10*

U.S. Cl. 435—193 9 Claims

1. An improved process for producing a fructosyl transferase enzyme preparation which comprises: inoculating a culture medium with cells from a strain of *Aureobasidium pullulans*, said culture medium comprising about 16 to about 24% (w/v) sucrose, about 1 to about 2.4% (w/v) yeast extract and about 1% (w/v) of an inorganic nitrate salt; and culturing the mixture at a pH of between 6 and 8 at 28°–32° C. until a yield of fructosyl transferase enzyme is obtained, wherein the enzyme preparation is recovered in high yields from the culture medium without the need to remove any black pigment or viscous polysacchride.

4,309,506

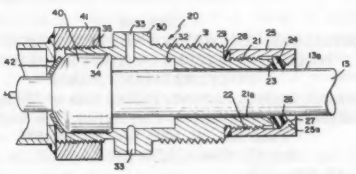
FERMENTATION SYSTEM AND FAILURE-DETECTION PROBE HOLDER

Robert W. Squires, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 11, 1980, Ser. No. 158,584

Int. Cl.³ C12M *1/34*

U.S. Cl. 435—291 5 Claims



1. A system for the preparation of biological agents, comprising

a tank for the fermentation of biological agents;

a threaded fitting in the tank wall;

a detector to monitor the fermentation process;

detector support means threadedly engaging the threaded fitting in the tank wall to support the operative portion of the detector within the tank and to provide access to the output of the detector outside of the vessel, said detector support means comprising

a detector support housing adapted to receive and support the detector and having an inner bore and carrying a seal at the end of the inner bore within the tank and having a first threaded outer surface portion to engage the threaded fitting in the tank wall, a sealable surface adjacent the end of the inner bore outside of the tank, and a second threaded outer surface surrounding the sealable surface;

a seal for the detector and seated on the sealable surface of the housing; and

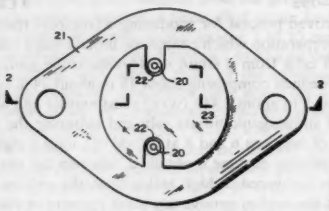
a seal compression nut threaded onto the second threaded outer portion of the detector support means,

said detector support means including a small bore that extends transversely between its inner bore and outer surface outside of the tank.

4,309,507
GLASS AND HERMETIC SEAL

Earl E. Davis, Tempe, and Robert W. Hey, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 23, 1981, Ser. No. 237,001
Int. Cl.³ C03C 3/04, 3/08
U.S. Cl. 501—21 2 Claims



1. A sealing glass consisting essentially of percentages of ingredients, by weight, in the range of:

SiO_2	63–68
Al_2O_3	3–6
K_2O	8–9
Na_2O	5–6
Li_2O	0.5–1.5
BaO	2–4
SrO	5–7
CaO	2–4
MgO	0.5–1.5
TiO_2	0.5–1.5
B_2O_3	0.5–1.5.

4,309,508
SILOXANE COPOLYMER MIXTURES USEFUL AS FOAM STABILIZERS IN HIGH RESILIENCE POLYURETHANE FOAM

Feyyaz O. Baskent, and Bela Prokai, both of Mahopac, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jun. 30, 1980, Ser. No. 163,974
Int. Cl.³ C08G 18/14; C07F 7/08, 7/10
U.S. Cl. 521—112 11 Claims

1. A siloxane copolymer mixture comprising: (1) from about 1 to about 35 weight percent of a high molecular weight siloxane-oxyalkylene copolymer selected from the group consisting of: (a) a siloxane-oxyalkylene copolymer having the average formula:

$$Me_3SiO(Me_2SiO)_x(MeSiO)_ySiMe_3$$
$$\qquad\qquad\qquad

wherein R_1 is C_5–C_{22}alkyl, R_2 is C_1–C_{22}alkyl or a group of the formula $—(CH_2CH_2O)_nH$ with n being an integer of from 1 to 5 and R_3 is C_{1-C5}alkyl or a group of the formula $—(CH_2CH_2O)_mH$ with m being an integer of from 1 to 10, if R_2 is alkyl having not more than 5 carbon atoms, the sum of n+m being not greater than 10.

4,309,511

PROCESS FOR PROMOTING THE LOW TEMPERATURE CURE OF POLYESTER RESINS

Donald E. Jefferson, Unionville; Charles G. Coe, Aston; Burton D. Beitchman, Springfield, and Melville W. Uffner, Glen Mills, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jun. 4, 1979, Ser. No. 45,446

Int. Cl.[3] **B01J** *31/02, 31/12;* **C03L** *67/00*

U.S. Cl. 525—14 **11 Claims**

1. In a process for curing a molding compound comprising an unsaturated polyester resin and unsaturated monomer copolymerizable therewith, the improvement for accelerating the cure rate of the molding compound while extending its shelf life in its uncatalyzed state, which comprises as a promoter

a cobalt salt with the cobalt salt being present in a proportion to provide from 0.0005–0.06 parts cobalt metal per 100 parts by weight of unsaturated polyester resin including unsaturated monomer;

a copper salt, the copper salt being present in a proportion to provide from $0.03\text{-}1\times10^{-6}$ parts copper metal per 100 parts by weight unsaturated polyester resin including unsaturated monomer; and

heterocyclic amines, the amine compound being present in an amount to provide from about 0.0001 to 0.05 moles amine per 100 parts unsaturated polyester resin including unsaturated monomer.

4,309,512

HEAT-RESISTANT THERMOSETTING RESIN COMPOSITION

Yukihiro Mikogami, Yokohama; Takeo Ito, Kawasaki, and Moriyasu Wada, Kanagawa, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Dec. 3, 1980, Ser. No. 212,354

Claims priority, application Japan, Dec. 26, 1979, 54-168168

Int. Cl.[3] **C08L** *29/04*

U.S. Cl. 525—58 **4 Claims**

1. A heat-resistant resin composition, comprising a resin system essentially consisting of (a) a maleimide compound modified with furfuryl alcohol, (b) an epoxy resin and (c) a polyvinyl formal and, incorporated therein as a latent curing agent or a curing accelerator, at least one compound selected from the group consisting of dicyandiamide, boron trifluoride-amine complexes, metal chelate compounds, and silicone compounds and organo-silane compounds having at least one hydroxyl group bonded directly to silicon atom.

4,309,513

NOVEL RESIN COMPOSITIONS BASED ON POLYPHENYLENE ETHER

Katsuji Ueno, Hirakata; Haruo Inoue, Kobe, and Akihiro Furuta, Takatsuki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jan. 13, 1981, Ser. No. 224,819

Claims priority, application Japan, Jan. 24, 1980, 55-7548

Int. Cl.[3] **C08L** *61/04*

U.S. Cl. 525—68 **13 Claims**

1. A resin composition based on a polyphenylene ether comprising 99 to 1 part by weight of a polyphenylene ether copolymer derived from 99.5 to 85 mole-% of 2,6-dimethylphenol and 0.5 to 15 mole-% of 3-methyl-6-tert-butylphenol and 1 to 99 parts by weight of a styrene polymer, said ether copolymer and said styrene copolymer (making up 100 parts by weight in total).

4,309,514

MOLDING COMPOSITIONS COMPRISING POLYPHENYLENE ETHER AND HYDROGENATED RADIAL BLOCK COPOLYMER OF VINYL AROMATIC COMPOUND AND DIENE RUBBER

Gim F. Lee, Jr., Albany, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Filed Nov. 30, 1979, Ser. No. 98,784

Int. Cl.[3] **C08L** *71/04, 53/02*

U.S. Cl. 525—92 **6 Claims**

1. A thermoplastic molding composition which comprises an intimate admixture of resinous components consisting essentially of:

(a) a polyphenylene ether resin; and

(b) a hydrogenated radial teleblock copolymer comprising a vinyl aromatic compound, a saturated diene rubber and a coupling agent, said polyphenylene ether and said teleblock copolymer copolymer being present in a weight ratio of 99:1 to 50:50.

4,309,515

TRANSLUCENT IMPACT POLYMERS

Larry S. Corley, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 5, 1980, Ser. No. 175,556

Int. Cl.[3] **C08F** *279/02*

U.S. Cl. 525—316 **5 Claims**

1. A process for the free-radical polymerization of a monovinyl aromatic monomer consisting essentially of:

(a) preparing a solution of about 4 to about 12 parts by weight of a polybutadiene rubber per 100 parts by weight of combined rubber and monovinyl aromatic monomer, said polybutadiene rubber having a cis-1,4 content of about 80% to about 98%, a trans-1,4 content of about 1% to about 19%, and a vinyl-1,2 content of about 1% to about 19%,

(b) heating the resulting solution with agitation and in the presence of about 0.01 to about 1 mole percent (based on the moles of monovinyl aromatic) of a free-radical initiator of t-butyl peroxybenzoate until about 25 to about 50 weight percent of the monovinyl aromatic is converted to polymer; and

(c) bulk polymerizing the resulting mixture in the absence of additional agitation at progressively increasing temperatures up to about 180° C. until about 75 to about 98 weight percent conversion of monomer to polymer, to provide a monovinyl aromatic polymer having an improved balance of translucency and impact, the structure of the monovinyl aromatic polymer comprising a continuous matrix of poly(monovinyl aromatic) having a dispersed phase of a reinforcing polybutadiene rubber, the rubber being present in a proportion of about 6 to about 9 parts by weight per one hundred parts by weight of the combined poly(monovinyl aromatic) and rubber, the rubber being in the form of a plurality of particles of generally cellular structure and containing occlusions of poly(monovinyl aromatic), the particles being a mixture of coil-shaped, capsule-shaped and bar-shaped particles having a weight average particle diameter not exceeding two microns and cell walls not greater than about 0.05 microns in thickness, the resulting polymer having a toughness-haze index of greater than about 30.

4,309,516
POLYMERS CONTAINING 2,5-OXOLANYLENE SEGMENTS

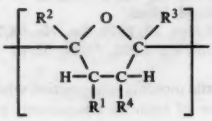
William J. Schultz, White Bear Lake, Minn., and Alan R. Katritzky, Norwich, England, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 740,661, Nov. 10, 1976, which is a continuation-in-part of Ser. No. 692,602, Jun. 2, 1976. This application Jun. 3, 1977, Ser. No. 803,207

Int. Cl.³ C08F *8/08, 112/00*

U.S. Cl. 525—334 15 Claims

1. A polymer containing recurring 2,5-oxolanylene units of the formula



wherein at least 60 percent of said units are joined directly to one another so as to provide segments consisting of at least six of said units; and wherein R^1, R^2, R^3 and R^4 are, individually, hydrogen or alkyl groups containing up to 8 carbon atoms each.

4,309,517
HYDROCARBYL ESTERS OF N-CYCLOPROPYL-N-HYDROCARBYLCARBAMIC ACIDS AS COUPLING AGENTS FOR CONJUGATED DIENE POLYMERIZATIONS

Kishore Udipi, East Longmeadow, Mass., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 23, 1980, Ser. No. 199,762

Int. Cl.³ C08F *4/46*

U.S. Cl. 525—374 9 Claims

1. A process of treating a living alkali metal terminated conjugated diene polymer, wherein said conjugated diene polymer is a homopolymer or copolymer of a conjugated diene or of a conjugated diene with a comonomer containing a vinylidene group, which comprises contacting said living alkali metal-terminated conjugated diene polymer with an effective coupling amount of a hydrocarbyl ester of N-cyclopropyl-N-hydrocarbylcarbamic acid, thereby resulting in a coupled conjugated diene polymer of increased molecular weight.

4,309,518
MOLDING COMPOSITIONS CONTAINING HIGH-MOLECULAR WEIGHT LINEAR POLYESTER

Gernot Horlbeck, Haltern, and Salih Mumcu, Marl, both of Fed. Rep. of Germany, assignors to Chemische Werke Huels, Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Jul. 25, 1980, Ser. No. 172,053

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1979, 2930343

Int. Cl.³ C08L *77/12*

U.S. Cl. 525—425 11 Claims

1. A molding composition comprising

A. 60–97% by weight, based on the weight of the total composition, of a poly(alkylene terephthalate) and

B. 3–40% by weight, based on the weight of the total composition, of a polyether ester amide,

the amount of component B being effective to increase the notch impact strength of the composition with respect to that of component A per se,

component A being the condensation product of

(1) 80–100 molar percent of terephthalic acid, and

(2) 0–20 molar percent of another hydrocarbon aromatic-, cycloalkane- or alkane-dicarboxylic acid of 6–36 C atoms, with

(3) 80–100 molar percent of a 1,n-alkanediol of 2–4C atoms, wherein n is an integer of 2 to 4, and

(4) 0–20 molar percent of another alkane- or cycloalkanediol of 3–12 C atoms,

component B being the condensation product of

(1) at least one polyamide-forming ω-aminoalkanecarboxylic acid or alkanelactam, each of 10–17 carbon atoms,

(2) a poly(alkylene glycol) having a molecular weight of 400 to 6000,

(3) at least one other alkane-, cycloalkane- or hydrocarbon aromatic-dicarboxylic acid of 4–11 carbon atoms,

wherein the weight ratio of component B(1) to [B(2)+B(3)] is 20:80 to 98:2, and the hydroxy and carboxy groups in [B(2)+B(3)] are present in amounts of approximately equivalent to each other.

4,309,519
PROCESS FOR PRODUCING FLYBACK TRANSFORMER

Mitsuo Obara, Katsuta; Akira Kageyama, and Isao Uchigasaki, both of Hitachi, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Jul. 9, 1980, Ser. No. 167,047

Claims priority, application Japan, Sep. 10, 1979, 54/116446

Int. Cl.³ C08F *283/00*

U.S. Cl. 525—445 7 Claims

1. A process for producing a flyback transformer which comprises insulatin treating the flyback transformer with a low-shrinkage resin composition comprising:

(a) a polyester produced by an addition-condensation reaction of a partially esterified dicyclopentadiene carboxylic acid obtained by reacting one of the following reactant groups (1) to (3) at 150° C. or lower:

(1) dicyclopentadiene and maleic acid,

(2) dicyclopentadiene, maleic acid and water, or

(3) hydroxylated dicyclopentadiene and maleic anhydride,

with one or more polyhydric alcohols,

(b) a monomer having one or more vinyl groups, and

(c) a low-shrinkage agent.

4,309,520
SILICONE ADHESIVE FORMULATIONS

John D. Blizzard, Bay City, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 115,980, Jan. 28, 1980, abandoned. This application Jan. 5, 1981, Ser. No. 222,473

Int. Cl.³ C08F *283/00*

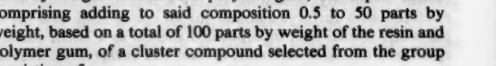
U.S. Cl. 525—477 9 Claims

1. In a silicone pressure sensitive adhesive composition comprising 45 to 75 parts by weight of a silicone resin and 25 to 55 parts by weight of a silicone polymer gum, the improvement comprising adding to said composition 0.5 to 50 parts by weight, based on a total of 100 parts by weight of the resin and polymer gum, of a cluster compound selected from the group consisting of

(A) $RSi\{OSi(OR')_3\}_3$,

(B) $M<OSi\{OSi(OR')_3\}_3>_a$,

(C) $M<OSiR\{OSi(OR')_3\}_2>_a$, and



wherein

R is hydrogen, an alkyl, alkenyl, aryl or aralkyl group,

R′ is hydrogen, an alkyl, alkenyl, aryl or aralkyl group with the proviso that at least a majority of the R′ radicals are sterically hindered alkyl groups having at least 3carbon atoms,

M is a substituted or unsubstituted branched or straight chain hydrocarbon radical,

a is 2, 3, or 4,

n is an integer from 0 to 300,

R'' is hydrogen, an alkyl, alkenyl, aryl, aralkyl or —OSi-(OR')$_3$ group, and

R''' is hydrogen, an alkyl, alkenyl, aryl, aralkyl, hydroalkyl, and halo or cyano substituted alkyl, alkenyl, aryl, aralkyl, and hydroalkyl.

4,309,521

PROCESS FOR PRODUCING α-OLEFIN POLYMERS

Akihiro Sato, Chibaken; Kazutsune Kikuta, Ichiharashi; Kenji Matsuda, Ichiharashi; Toshihiro Uwai, Ichiharashi, and Tohru Hanari, Ichiharashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed May 14, 1980, Ser. No. 149,684

Claims priority, application Japan, Feb. 27, 1980, 55-23785

Int. Cl.^{3} C08F *4/66, 10/00*

U.S. Cl. 526—114 **20 Claims**

1. A process for producing α-olefin polymers which comprises:

(a) reacting one mol of an organoaluminum compound (A_1) with 0.1 to 8 mols of an electron donor (B_1) in a solvent at a temperature of −20° to 200° C., to obtain a solid product (I);

(b) reacting this solid product (I) with $TiCl_4$ in a ratio (Al/Ti) of the number of atoms of aluminum to that of Ti in $TiCl_4$ of 0.05 to 10, at a temperature of 0° to 200° C., and thereafter removing the resulting liquid portion and $TiCl_4$ freed by washing, to obtain a solid product (II);

(c) reacting 100 g of this solid product (II) with 10 to 1,000 g of an electron donor (B_2) and 10 to 1,000 g of an electron acceptor at a temperature of 40° to 200° C., to obtain a solid product (III);

(d) combining 1 g of said solid product (III) with 0.1 to 500 g of an organoaluminum compound (A_2) and subjecting said combination to polymerization treatment with 0.01 to 5,000 g of an α-olefin,

(e) adding to said 1 g of solid product (III) and said 0.1 to 500 g of organoaluminum compound (A_2) (either prior to or subsequent to said polymerization treatment with 0.01 to 5,000 g of an α-olefin) 0.05 to 10 g of a reaction product (G) obtained by reacting

(1) 1 mol of an organoaluminum compound (A_3) with

(2) 0.01 to 5 mols of an electron donor (B_3)

(3) such reaction being carried out at a temperature of −30° to 100° C., to thereby establish a preliminary activated cataly

(f) polymerizing an α-olefin or α-olefins in the present this preliminarily activated catalyst.

4,309,522

PROCESS FOR THE PRODUCTION OF EXTENSIVELY AMORPHOUS BUTENE-1-PROPENE-ETHENE TERPOLYMERS HAVING A HIGH SOFTENING POINT

Johannes Dietrich; Walter Dittmann; Albert Frese, and Wolfgang Kilian, all of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Huels, Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Jul. 24, 1980, Ser. No. 171,689

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1979, 2930108

Int. Cl.^{3} C08F *4/64, 210/16*

U.S. Cl. 526—158 **8 Claims**

1. A process for preparing an extensively amorphous butene-1-propene-ethene terpolymer having a high softening point of 90°–135° C. comprising low pressure solution polymerizing 25–76% by weight of butene-1, 24–70% by weight of propene and 0.1–20% by weight of ethene by contacting these monomers with a catalytically effective amount of a mixed catalyst of a thermally unstable, crystalline $TiCl_3$·0.030 to 0.35 $AlCl_3$ prepared by the reduction of $TiCl_4$ with Al, and a trialkyl aluminum or dialkyl aluminum hydride, each having alkyl groups of 2–4 carbon atoms, the atomic ratio of Al:Ti being 0.8–4.0 whereby said extensively amorphous terpolymer is produced.

7. The extensively amorphous butene-1-propene-ethene terpolymer prepared by the process of claim 1, having a softening point of 90°–135° C., an ether soluble proportion of 60–99%, a penetration value of 8–30 mm^{-1}, a viscosity of 1,000–100,000 mPa·sec at 190°0 C., and a viscosity number J of 20–150 cc/g.

4,309,523

WATER-SOLUBLE COPOLYMER OF ACRYLAMIDOMETHYLPROPANESULFONIC ACIDS SALTS

Friedrich Engelhardt; Ulrich Riegel, both of Frankfurt am Main; Martin Hille, Liederbach, and Heinz Wittkus, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 1, 1980, Ser. No. 174,731

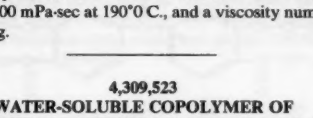
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1979, 2931897

Int. Cl.^{3} C08F *228/02*

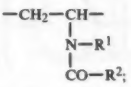
U.S. Cl. 526—240 **4 Claims**

1. Water-soluble copolymer consisting essentially of a random distribution of

(a) 5 to 95% by weight of units of the formula

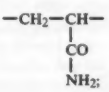


(b) 5 to 95% by weight of units of the formula



and

(c) 0 to 80% by weight of units of the formula



wherein R^1 and R^2 are the same or different and each is hydrogen, methyl or ethyl;

and $X^{\oplus}$ is a cation.

4,309,524

ANAEROBIC ADHESIVES COMPOSITIONS

Thomas F. Huemmer, and Pallavoor R. Lakshmanan, both of Houston, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Jun. 20, 1980, Ser. No. 161,728

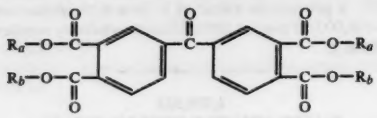
Int. Cl.^{3} C08F *220/20*

U.S. Cl. 526—284 **15 Claims**

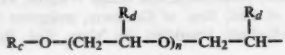
1. In an anaerobic adhesive composition which contains a plurality of polymerizable unsaturated monomers and a free radical generating polymerization initiator and which will cure at ambient temperature in the absence of oxygen, but will not cure at ambient temperature in the presence of air; the improvement which consists essentially of employing as the principal polymerizable monomers a mixture of:

(a) a polyacrylate terminated ester of 3,4,3',4'-benzophenone tetracarboxylic acid (BTA), and

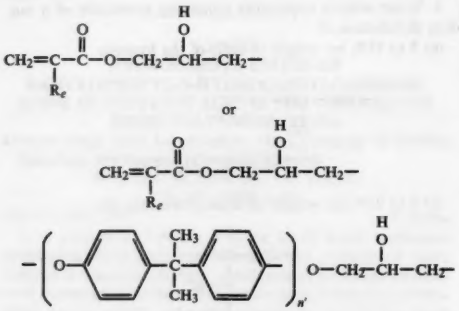
(b) an acrylate terminated urethane prepolymer; the weight ratio of component (a) to component (b) being from about 1/4 to about 4/1; said component (a) having the formula:



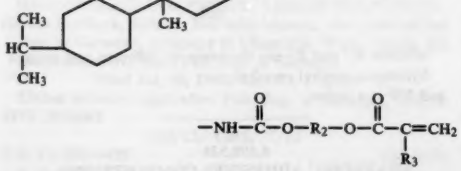
where R_a is an alkyl group containing up to about 18 carbon atoms, or an alkoxy ether moiety having the structure:



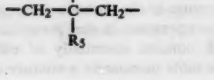
where R_c is an alkyl group containing up to about 18 carbon atoms, R_d is hydrogen or a methyl group, and n is zero or a small integer, and R_b has the structure:



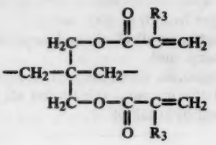
where R_e is hydrogen or a methyl group and n' is a small integer, said component (b) having the formula:



where the phenanthrene ring contains up to 3 double bonds, R_1 is an alkylene or arylene divalent radical, and R_2 is a divalent alkylene radical, or a divalent radical having the structure:



or a divalent radical having the structure:



R_3 is a hydrogen or a methyl group and R_5 is an alkyl group.

4,309,525

PRODUCTION OF SPHERE-FORMED POWDERY COPOLYMERS

Masamitsu Nakabayashi, Sennan; Fumihiro Doura, Sakai, and Yuzo Furukawa, Kawanishi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed May 15, 1980, Ser. No. 149,956

Claims priority, application Japan, May 21, 1979, 54/62433; Apr. 15, 1980, 55/49957

Int. Cl.³ C08F *6/22*

U.S. Cl. 528—487 **10 Claims**

1. A method for producing spherical powder of a hydrolyzed ethylene-vinyl acetate copolymer or its carboxyl modified product, which comprises

mixing (A) 100 parts by weight of (1) a hydrolyzed product of an ethylene-vinyl acetate copolymer having 5 to 50% by weight of vinyl acetate group content or (2) a carboxyl modified product of said hydrolyzed product obtained by reacting said hydrolyzed product with an unsaturated carboxylic acid or cyclic acid anhydride, both of said (1) and (2) containing sodium acetate as an impurity, with (B) 10 to 100 parts by weight of an organic solvent which is capable of dissolving said hydrolyzed product or said carboxyl modified product, said solvent being not freely miscible with water and having a boiling point of not lower than 80° C., (C) 300 to 1000 parts by weight of water, (D) 0.1 to 10 parts by weight of an alkylphenol ethylene oxide adduct having an HLB value of 10 to 20, and (E) an alkylbenzene sulfonic acid,

emulsifying the resultant mixture while maintaining said mixture at a temperature of not lower than the softening point of said hydrolyzed product or said carboxyl modified product, and not higher than 95° C., and

decreasing the temperature of the resultant system, under stirring, down to not higher than said softening point, to produce said powder which has a virtually spherical particle form and which has a particle size distribution such that not less than 70% of the particles are between 70 and 300μ.

4,309,526

UNSATURATED CURABLE POLY(ALKYLENE)ETHER POLYOL-BASED RESINS HAVING IMPROVED PROPERTIES

Louis J. Baccei, Newington, Conn., assignor to Loctite Corporation, Newington, Conn.

Continuation of Ser. No. 646,319, Jan. 5, 1976, abandoned, which is a continuation-in-part of Ser. No. 557,740, Mar. 12, 1975, abandoned. This application Jan. 17, 1980, Ser. No. 112,877

Int. Cl.³ C08G *18/28*

U.S. Cl. 528—75 **15 Claims**

1. A curable, polymerizable adhesive and sealant composition comprising:

I. the reaction product of

(a) at least a molar equivalent of a hydroxyalkyl acrylate, a hydroxylalkyl methacrylate an aminoalkyl acrylate or an aminoalkyl methacrylate with

(b) the reaction product of

(1) a poly(alkylene) ether polyol with
(2) at least a molar equivalent of the -NCO capped reaction product of:
(i) an aromatic or cycloaliphatic polyisocyanate with
(ii) an aromatic or cycloaliphatic polyol or polyamine and,
II. a free radical initiator.

4,309,527

FIRE RETARDANT POLYMER RESIN

Lawrence E. McAllister, Dayton, and Herbert Dietrich, Kennebunk, both of Me., assignors to Fiber Materials, Inc., Biddeford, Me.

Division of Ser. No. 73,218, Sep. 7, 1979, Pat. No. 4,275,170, which is a continuation-in-part of Ser. No. 58,567, Jul. 18, 1979, abandoned. This application Feb. 9, 1981, Ser. No. 232,994
Int. Cl.³ C08G 8/06
U.S. Cl. 528—138 1 Claim

1. A flame retardant polymer resin prepared according to the method comprising the steps of

reacting moities of a first aldehyde and first phenol in the presence of a mineral acid in sufficient proportions to provide an acid-condensation reaction product in the form of a relatively low molecular weight, low viscosity, liquid linear polymer having excess aldehyde functionality, said first aldehye being selected from the group consisting of furfural and mixtures of furfural and paraformaldehyde, said first phenol being selected from the group consisting of metacresol, orthocresol, 3,5 dimethylphenol, resorcinol and substituted resorcinols;

mixing moities of a second aldehyde and second phenol to provide a solution of said second phenol in said second aldehyde, which solution is separate from said reaction product and contains said aldehyde in molar excess, said second aldehyde and second phenol being selected from the same groups as said first aldehyde and first phenol;

adding to said reaction product a solid, organic, watersoluble acid as a polymerization active catalyst;

adding to said solution an inorganic acid polymerization catalyst containing water of hydration, said inorganic acid being selected from the group consisting of boric acid and boric acid complexes; and

reacting a mixture of said reaction product and said solution in the presence of said catalysts to produce condensation polymerization thereof into said resin.

4,309,528

INJECTION MOLDABLE AMIDE-IMIDE COPOLYMERS

Robert G. Keske, and James R. Stephens, both of Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jan. 16, 1980, Ser. No. 112,653
Int. Cl.³ C08G 73/14
U.S. Cl. 528—188 19 Claims

1. A process for the preparation of random linear injection moldable amideimide and amide copolymers having an inherent viscosity of about 0.6 to 3.0 which process comprises reacting fully or partially acylated aromatic diamines, wherein at least half of the diamines utilized in the reaction are acylated in the presence of C_2 through C_8 containing aliphatic anhydrides or acids, with aromatic tricarboxylic acid anhydrides, or mixtures of aromatic dicarboxylic acids and aromatic tricarboxylic acid anhydrides in a molar ratio of about 9:1 to about 1:9 at a temperature of about 450° to 750° F., and wherein the molar ratio of the diamines to the anhydride or acid and anhydride mixture is about 0.9:1 to 1.1:1.

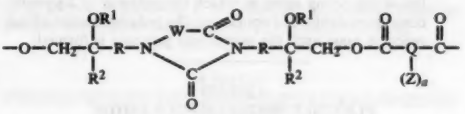
4,309,529

WATER-DISPERSIBLE ENERGY CURABLE HETEROCYCLIC GROUP-CONTAINING POLYESTERS

Larry A. Wendling, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 12, 1980, Ser. No. 148,776
Int. Cl.³ C08G 63/68, 69/44
U.S. Cl. 528—289 27 Claims

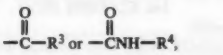
1. A composition comprising an energy-curable polyester, said polyester being crosslinkable and having heterocyclic moieties and backbone alpha-methylene groups and repeating units of the general formula:



wherein

R is a single bond or an alkylene group having 1 to 6 carbon atoms and optionally one catenary oxygen;

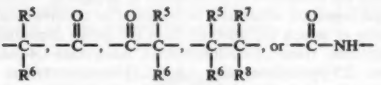
R^1 is hydrogen,



wherein R^3 is alkenyl or alkyl having 2 to 5 carbon atoms and can be substituted by phenyl or carboxyl and R^4 is aliphatic or aromatic hydrocarbyl having up to 8 carbon atoms;

R^2 is hydrogen or methyl;

W is a divalent group that is required to complete a 5- or 6-membered heterocyclic ring, wherein W is



and wherein R^5, R^6, R^7, and R^8 are independently hydrogen or lower alkyl or 1 to 4 carbon atoms;

Q is the divalent or trivalent residue of hydrocarbyl di- or tri-carboxylic acids, said residue formed by the removal of active hydrogens from the carboxylic acid groups and containing up to 40 carbon atoms and optionally containing catenary oxygen atoms; and

a is zero or one, but can be one for no more than 20 mole percent of the carboxylic acids, and

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4,309,530

TWO STAGE PROCEDURE FOR THE PREPARATION OF POLYPYRROLIDONE

Edmond H. J. P. Bour, Limbricht; Johannes A. L. Brouwers, Echt, and Jean M. M. Warnier, Urmond, all of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed Jan. 18, 1980, Ser. No. 113,286
Claims priority, application Netherlands, Jan. 19, 1979, 7900425
Int. Cl.³ C08G 69/24
U.S. Cl. 528—326 6 Claims

1. In a process for preparing a solid, particulate polymer from a 2-pyrrolidone monomer composition comprising 2-pyrrolidone and 0–25 mol %, based on 2-pyrrolidone, of a differ-

ent copolymerizable lactam, with at least one polymerization catalyst and at least one polymerization accelerator,

the improvement comprising polymerizing said monomer composition in two distinct stages, wherein:

(1) in a first stage, 2-pyrrolidone monomer composition is polymerized in the mass whereby, apart from the reactants, not more than roughly 15 volume %, based on the volume of the reactants, of a liquid dispersion agent or other liquid is present, for a period of between 5 minutes and 4 hours until the conversion of the monomer composition is at least 10% to form a reaction mass which is capable of being suspended in a liquid, and thereafter,

(2) in a second stage, suspending the reaction mass in an inert liquid dispersing agent in which the polymer of 2-pyrrolidone is insoluble, and continuing the polymerization of the reaction mass until the particulate polymer is formed.

4,309,531
FLEXIBLE/RIGID COPOLYAMIDE

Joseph Kyritsos, Craponne, and Jean Sacco, Lyons, both of France, assignors to Rhone-Poulenc-Textile, France

Division of Ser. No. 890,992, Mar. 28, 1978, Pat. No. 4,231,913, which is a continuation of Ser. No. 580,244, May 23, 1975, abandoned. This application May 23, 1980, Ser. No. 152,816
Claims priority, application France, May 24, 1974, 74 18524
Int. Cl.³ C08G *69/26*
U.S. Cl. 528—339 **17 Claims**

1. A copolyamide with a fiber-forming inherent viscosity of at least 1 when measured on a solution in substantially pure sulphuric acid at 25° C. and at a concentration of 0.5 g of polymer in 100 ml of solution, consisting of units selected from the group consisting of: —CO—R_n—CO—, —NH—R-'—NH—, and —CO—R″—NH— units wherein at least 5 mol % of the total quantity of radicals R, R′, and R″ are flexible radicals selected from the group consisting of tetramethylene radicals, butenylene radicals, and tetramethylene or butenylene radicals substituted by one or more lower alkyl or halogen radicals; the remainder of the radicals R, R′, and R″ consisting of rigid segments which can be identical or different and the majority of which are selected from the group consisting of: p-phenylene, trans-1,4-cyclohexylene, trans-trans-1,4-butadienylene, 2,5-pyridylene, and 1,4-[2,2,2]-bicyclooctylene segments or their substituted derivatives; and wherein n is 0 or 1; with the proviso that when R′ is flexible, it can be present only as tetramethylene or substituted tetramethylene in an amount of about 5 to about 20 mol % of the total quantity of radicals R, R′, and R″ and in the sequence:

—NH—R″—CO—NH—R′—NH—CO—R′-
'—NH—

and that no unit —CO—R″—NH— is linked directly to another —CO—R″—NH—; said copolyamide being capable of forming shapeable sulphuric compositions which are fluid and optically anisotropic at temperatures below 100° C.

4,309,532
MODIFICATION OF AMINO POLYOLS WITH EPOXY RESINS

Michael Cuscurida; Neal J. Grice, and George P. Speranza, all of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 2, 1980, Ser. No. 183,558
Int. Cl.³ C07C *91/10, 93/00;* C07H *15/18;* C08G *18/28*
U.S. Cl. 536—4 **16 Claims**

1. A modified amino polyol for use in preparing rigid polyurethane foams, the modified amino polyol being produced by the reaction of

(a) a rigid foam polyol initiator having an active hydrogen functionality equal to or greater than four

(b) an amine,

(c) one or more alkylene oxides and

(d) an epoxy resin.

8. A modified amino polyol for use in preparing rigid polyurethane foams, the modified amino polyol being produced by the reaction of

(a) a rigid foam polyol initiator having an active hydrogen functionality equal to or greater than four selected from the group of initiators consisting of sucrose, sorbitol, methyl glucoside, starch glycosides and aliphatic or aromatic amines

(b) an amine,

(c) one or more alkylene oxides and

(d) an epoxy resin selected from the group of epoxy resins consisting of the diglycidyl ether of Bisphenol A, epoxy novolak resins and aliphatic epoxy resins

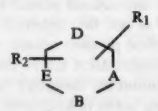
in which the epoxy resin is reacted last and in which the ratio of the equivalent weight of intermediate polyol oxide adduct to the equivalent weight of epoxy is at least 2 to 1.

4,309,533
LINCOMYCIN COMPOUNDS

Robert D. Birkenmeyer, Comstock Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 148,056, May 19, 1980, Pat. No. 4,278,789, and a continuation-in-part of Ser. No. 96,652, Nov. 23, 1979, abandoned. This application Oct. 6, 1980, Ser. No. 194,632
Int. Cl.³ C07H *15/16*
U.S. Cl. 536—11 **3 Claims**

1. A compound of the formula



wherein A, B, D and E are selected from the group consisting of nitrogen, oxygen, sulfur and CR_1R_1; wherein R_1 is selected from the group consisting of hydrogen, alkyl and substituted alkyl wherein the alkyl portion is from 1 to 8 carbon atoms, inclusive, and isomeric forms thereof, cycloalkyl and substituted cycloalkyl, substituted oxygen, substituted nitrogen, halogen, phenyl, and substituted phenyl, —$(CH_2)_n$—OH, —$(CH_2)_n$—NR_4R_5, and isomeric forms thereof, wherein n is an integer of from 1 to 8, inclusive, R_4 and R_5 are H or alkyl of from 1 to 8 carbon atoms, inclusive, and isomeric forms thereof; wherein R_2 is

and X is the amino function of a compound selected from the group 7(R)-hyroxy-methyl 1-thio-α-lincosaminide, 7(S)-hydroxy-methyl 1-thio-α-lincosaminide, 7(S)-halo-methyl 1-thio-α-lincosaminide, 7(R)-halo-methyl 1-thio-α-lincosaminide, 7(S)-methoxy-methyl 1-thio-α-lincosaminide, 7-deoxy-7(S)-(methylthio)-methyl 1-thio-α-lincosaminide, 7-deoxy-7(S)-(2-hydroxyethylthio)-methyl 1-thio-α-lincosaminide and 7-deoxy-7(S)-(3-hydroxypropylthio)-methyl 1-thio-α-lincosaminide; R_1 and R_2 can be attached to any ring carbon or nitrogen atom; R_1 can be multiply attached to any ring carbon atom, and the pharmaceutically acceptable acid addition salts thereof.

4,309,534

RENATURED CHITOSAN AND PROCESS OF MAKING SAME

Paul R. Austin, Wilmington, Del., assignor to University of Delaware, Newark, Del.

Filed Feb. 15, 1979, Ser. No. 12,505
Int. Cl.³ C08B 37/08; C08L 5/08
U.S. Cl. 536—20 5 Claims

1. The process for preparing renatured chitosan having an optical rotation as measured in solution at least 20% more negative than that of untreated chitosan which comprises mixing chitosan at room temperature with an aqueous, organic acid at a pH of about 2.0–5.5 until substantially all of the chitosan has dissolved, and allowing the solution to stand at room temperature for about 2–14 days, until the optical activity shifts toward the negative by at least about 20% and thereafter recovering renatured chitosan from the solution.

4,309,535

METHOD OF IMPROVING DISPERSIBILITY OF ANIONIC CELLULOSE ETHERS

Thomas G. Majewicz, Chadds Ford, Pa., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 113,878, Jan. 21, 1980, abandoned. This application Sep. 5, 1980, Ser. No. 184,582
Int. Cl.³ C08G 18/32
U.S. Cl. 536—85 4 Claims

1. In the method of preparing aqueous solutions of anionic water-soluble polymers wherein particulate anionic water-soluble polymer is treated with aluminum ion to delay its hydration in aqueous systems, the improvement which comprises dissolving said treated polymer particles in the presence of about 2 to 25% by weight, based on polymer weight, of an aluminum chelant.

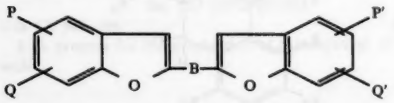
4,309,536

PROCESS FOR THE MANUFACTURE OF BIS-BENZO-FURANYL COMPOUNDS

Erich Schinzel, Hofheim, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

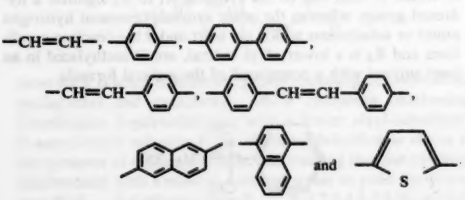
Filed Sep. 11, 1980, Ser. No. 186,400
Claims priority, application Fed. Rep. of Germany, Sep. 14, 1979, 2937231
Int. Cl.³ C07D 407/06, 407/10, 407/14
U.S. Cl. 542—454 7 Claims

1. Process for the manufacture of bis[benzofuranyl-(2)] compounds of the formula (I)

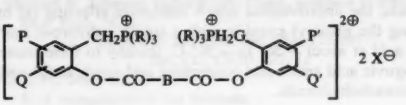


(I)

in which B denotes a direct link or one of the following groups



P, Q, P' and Q, independent of one another, are hydrogen or halogen atoms, lower alkoxy or phenyl, optionally functionally modified carboxy groups, or P and Q as well as P' and Q' together denote a fused benzene nucleus, which comprises subjecting compounds of the formula II



(II)

in which B, P, Q, P' and Q' are as defined above and
R denotes alkyl, aryl or aralkyl and
X stands for an anion,
in an aprotic solvent and in the presence of an alkali metal or alkaline earth metal carbonate to a cyclization reaction.

4,309,537

PRODUCTION OF IMIDAZO[4,5-b]PYRIDIN-2-ONES OR THIONES

George Y. Lesher; Chester J. Opalka, Jr., both of Schodack, and Donald F. Page, East Greenbush, all of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 135,105, Mar. 28, 1980. This application Feb. 20, 1981, Ser. No. 236,147
Int. Cl.³ C07D 471/04, 413/14, 401/14
U.S. Cl. 544—127 1 Claim

1. The process which comprises reacting 2-R_3NH-3-R_1NH-5-PY-6-Q-pyridine with urea or carbonyldiimidazole to produce 1,3-dihydro-1-R_1-3-R_3-6-PY-5-Q-2H-imidazo[4,5-b]pyridin-2-one or with an alkali metal xanthate, thiourea or thiocarbonyldiimidazole to produce 1,3-dihydro-1-R_1-3-R_3-6-PY-5-Q-2H-imidazo[4,5-b]pyridine-2-thione, where Q is hydrogen or lower-alkyl, R_1 and R_3 each are hydrogen, lower-alkyl, lower-hydroxyalkyl, 2,3-dihydroxypropyl, lower-alkoxyalkyl or Y-NB where Y is lower-alkylene having at least two carbon atoms between its connecting linkages and NB is di-(lower-alkyl)amino or 4-morpholinyl, at least one of R_1 or R_3 being hydrogen, and PY is 4- or 3-pyridinyl or 4- or 3-pyridinyl having one or two lower-alkyl substituents.

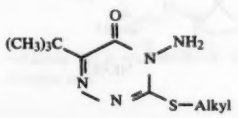
4,309,538

PREPARATION OF 4-AMINO-6-TERT.-BUTYL-3-ALKYLTHIO-1,2,4-TRIAZIN-5(4H)-ONES

Thomas Schmidt, Haan; Andreas Wittig, Wuppertal; Hans-Peter Sehnem, Wuppertal; Hans Krätzer, Wuppertal, and Rolf-Jürgen Singer, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 22, 1981, Ser. No. 227,442
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1980, 3003541; Jan. 31, 1981, 3003542
Int. Cl.³ C07D 253/06
U.S. Cl. 544—182 11 Claims

1. In the preparation of 4-amino-6-tert.-butyl-3-alkylthio-1,2,4-triazin-5(4H)-one of the formula



wherein (a) pivaloyl cyanide of the formula

$(CH_3)_3C—CO—CN$

is converted to derivative of trimethylpyruvic acid. (b) the derivative is condensed with thiocarbohydrazide of the formula

$H_2N—NH—CS—NH—NH_2$

to form 4-amino-6-tert.-butyl-3-mercapto-1,2,4-triazin-5(4H)-one, and (c) that is alkylated to form the indicated end products, the improvement which comprises effecting (a) by reacting the pivaloyl cyanide with a strong anhydrous inorganic acid at about −50° to +50° C. thereby to form trimethylpyruvic acid amide and condensing said amide in (b) with the thiocarbohydrazide.

4,309,539

PYRIMIDINE DERIVATIVES

Arthur Boller, Binningen; Marco Cereghetti, Basel, and Hanspeter Scherrer, Therwil, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

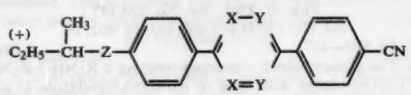
Continuation of Ser. No. 885,724, Mar. 13, 1978, abandoned. This application Dec. 10, 1979, Ser. No. 101,604

The portion of the term of this patent subsequent to Dec. 13, 1994, has been disclaimed.

Int. Cl.³ C07D *239/20*

U.S. Cl. 544—242 **17 Claims**

1. An optically active compound of the formula



wherein Z is $-(CH_2)_n-$ or $-(CH_2)_n-O-$, wherein n is an integer of 1 to 4, and each of the symbols X is nitrogen and each of the symbols Y is —CH—, or each of the symbols Y is nitrogen and each of the symbols X is —CH—.
or its (−) optical antipode.

4,309,540

SUBSTITUTED PYRAZINYL-1,2,4-OXADIAZOLES

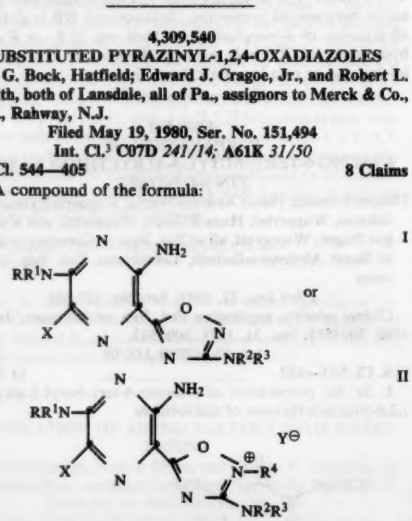
Mark G. Bock, Hatfield; Edward J. Cragoe, Jr., and Robert L. Smith, both of Lansdale, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 19, 1980, Ser. No. 151,494

Int. Cl.³ C07D *241/14*; A61K *31/50*

U.S. Cl. 544—405 **8 Claims**

1. A compound of the formula:



wherein
R is hydrogen or lower alkyl (C_{1-5}),
R^1 is hydrogen or lower alkyl (C_{1-5}),
R^2 is hydrogen or lower alkyl (C_{1-5}),
R^3 is hydrogen or lower alkyl (C_{1-5}),
R and R^1 can be joined to form with an alkylene group of from 2–4 carbon atoms,
R^4 is lower alkyl (C_{1-5})
X is halo, cyano or phenyl, and
Y^- is chloride, bromide or iodide, or a suitable anion.

4,309,541

PIPERIDINYL-LACTAMS

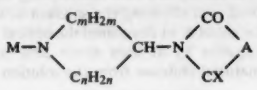
Lincoln H. Werner, Summit, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 115,634, Jan. 28, 1980, Pat. No. 4,255,429, which is a continuation-in-part of Ser. No. 46,062, Jun. 6, 1979, abandoned, which is a continuation-in-part of Ser. No. 944,057, Sep. 20, 1978, abandoned. This application Apr. 9, 1980, Ser. No. 138,764

Int. Cl.³ C07D *401/04*

U.S. Cl. 546—16 **10 Claims**

1. A 3- or 4-piperidinyl-lactam of the formula



wherein M is hydrogen or an alkali metal; each of m and n is an integer from 1 to 3, but m+n=4; X represents oxo; and A is lower alkylene, 4 to 7 ring-membered cycloalkylene, cycloalkyl-lower alkylene, spirocycloalkane-lower alkylene, phenyl-lower alkylene unsubstituted or substituted in the benzene ring by up to 3 lower alkyl or lower alkoxy groups, or by one lower alkylenedioxy group.

10. A compound as claimed in claim 4, and being the 8-(4-piperidinyl)-8-azaspiro[4,5]decan-7,9-dione.

4,309,542

PROCESS FOR THE O-METHYLATION OF HYDROXYAPORPHINES

Johannes Hartenstein, Stegen-Wittental, and Gerhard Satzinger, Denzlingen, both of Fed. Rep. of Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

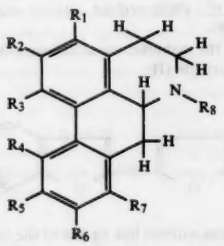
Filed Dec. 19, 1978, Ser. No. 971,143

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1977, 2757335

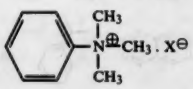
Int. Cl.³ C07D *221/18*

U.S. Cl. 546—075 **8 Claims**

1. Process for the O-methylation of hydroxyaporphines, wherein the phenolic hydroxyl groups of a compound of the general formula



in which at least one of the symbols R_1 to R_7 signifies a hydroxyl group, whereas the other symbols represent hydrogen atoms or substituents which are inert under the reaction conditions and R_8 is a lower alkyl radical, are O-methylated in an inert solvent with a compound of the general formula



in which X^- is a hydroxyl group or a lower alkoxy radical, whereafter the reaction product is isolated and, if desired, converted into a pharmacologically acceptable salt.

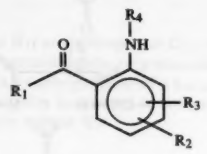
4,309,543

PROCESS FOR PREPARING CYCLIC AMIDES

Donald E. Keeley, Delmar, N.Y., assignor to Dynapol, Palo Alto, Calif.

Filed Mar. 17, 1980, Ser. No. 130,667
Int. Cl.³ C07D *221/18*
U.S. Cl. 546—76 10 Claims

1. A process for the synthesis of a cyclic amide which comprises contacting acetic acid or a substituted acetic acid with an aromatic amino carbonyl compound of the formula



wherein R_1 is hydrogen or an optionally substituted 1 to 10 carbon atom alkyl chain, R_2 and R_3 independently are selected from alkaryls, hydrogens, 1 to 10 carbon alkyls, aryls, cycloalkyls and R_4 is selected from hydrogen, alkyls of from 1 to 8 carbons, and aryls, alkaryls and aralkyls of from 6 to 10 carbons, in the presence of a promoting amount of a metal selected from titanium (IV) and silicon (IV), and a pyridine compound under effective reaction conditions of a liquid phase reaction, acetic acid:amino carbonyl compound mole ratio of from 3:1 to 1:3, a reaction temperature of from −10° C. to 200° C. and a reaction time dependent upon the reaction temperature and selected in the range of from 3 minutes to 200 hours.

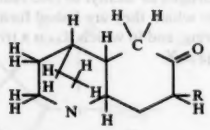
4,309,544

PREPARATION OF 6-OXA-1-AZATRICYCLO(6.2.2.0^{2,7})DODECANE-5-ONES

Sasson Cohen, Tel-Aviv, and Abraham Fisher, Holon, both of Israel, assignors to The Purdue Frederick Company, Norwalk, Conn.

Division of Ser. No. 953,514, Oct. 23, 1978, Pat. No. 4,226,996, which is a division of Ser. No. 852,402, Nov. 17, 1977, Pat. No. 4,183,938, which is a division of Ser. No. 655,650, Feb. 6, 1976, Pat. No. 4,083,985. This application Jul. 20, 1979, Ser. No. 58,968
Claims priority, application Israel, Nov. 11, 1975, 48543
Int. Cl.³ C07D *487/02*
U.S. Cl. 546—94 2 Claims

1. A process for the production of a compound of the formula:



wherein R is selected from the group consisting of lower alkyl, cyclopentyl and cyclohexyl, which comprises condensing 2-methylene 3-quinuclidinone with a lower alkyl-substituted R-acetoacetate wherein R has the same definition as above in the presence of sodium alkoxide, and treating the thus obtained intermediate with a mineral acid and water to yield the corresponding 1,4-ethano-6-oxo-7- R-1,2,3,4,6,7,8,8a-octahydroquinoline, which latter is is reduced with hydrogen in the presence of catalytic quantities of palladium on carbon to yield the desired product.

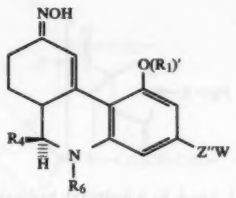
4,309,545

OXIMINO-1-HYDROXYOCTAHYDROBENZO[c-]QUINOLINES AND DERIVATIVES THEREOF

Michael R. Johnson, Gales Ferry, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Jul. 28, 1980, Ser. No. 173,207
Int. Cl.³ C07D *221/12*
U.S. Cl. 546—108 5 Claims

1. A compound of the formula



where

$(R_1)'$ is hydrogen, benzyl, benzoyl or alkanoyl having from one to five carbon atoms;

R^4 is hydrogen, alkyl having from one to six carbon atoms or $—(CH_2)_z—C_6H_5$ wherein z is an integer from one to four;

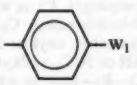
R_6 is a member selected from the group consisting of hydrogen, $—(CH_2)_y$-carboalkoxy having from one to four carbon atoms in the alkoxy group and wherein y is 0 or an integer from 1 to 4, carbobenzyloxy, formyl, alkanoyl having from two to five carbon atoms, alkyl having from one to six carbon atoms, $—(CH_2)_x—C_6H_5$ wherein x is an integer from 1 to 4 and $—CO(CH_2)_{x-1}—C_6H_5$;

Z″ is selected from the group consisting of

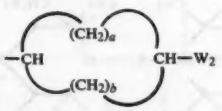
(a) alkylene having from one to nine carbon atoms;

(b)-$(alk_1)_m$-O-$(alk_2)_n$- wherein each of (alk_1) and (alk_2) is alkylene having from one to nine carbon atoms, with the proviso that the summation of carbon atoms in (alk_1) plus (alk_2) is not greater than nine; each of m and n is 0 or 1; and

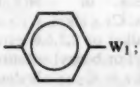
W is selected from the group consisting of hydrogen, methyl, pyridyl, piperidyl,



wherein W_1 is selected from the group consisting of hydrogen, fluoro and chloro; and



wherein W_2 is selected from the group consisting of hydrogen and



a is an integer from 1 to 5 and b is 0 or an integer from 1 to 5; with the proviso that the sum of a and b is not greater than 5.

4,309,546

PIPERIDINO PYRROLIDINONES

Friedrich Karrer, Zofingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

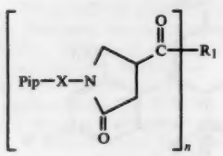
Filed Apr. 24, 1980, Ser. No. 143,387

Claims priority, application Switzerland, Apr. 27, 1979, 3991/79

Int. Cl.³ C07D 401/04, 401/14, 401/12

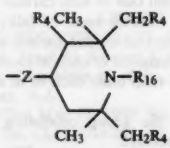
U.S. Cl. 546—187 9 Claims

1. A pyrrolidone of the formula I



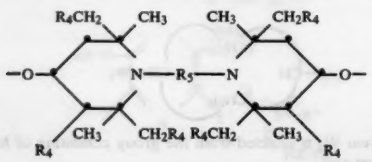
(I)

wherein n is 1, 2, 3 or 4; R_1 is hydroxyl, hydroxyl converted to Ca, Mg, Al, Zn, Co or Ni salts, or, when n is 1, is C_{1-20} alkoxy, C_{3-20} oxaalkoxy, C_{3-20} alkenyloxy, C_{3-6} alkynyloxy, C_{5-7} cycloalkoxy, C_{6-18} aryloxy, (C_{1-8} alkyl)-phenoxy, halogenophenoxy, hydroxyphenoxy, (C_{1-8} alkyl)-hydroxyphenoxy, C_{7-16} aralkoxy which can be substituted in the phenyl nucleus by C_{1-8} alkyl, halogen or hydroxyl, or also 2-hydroxyethoxy, which can be substituted in the 2-position by alkyl, phenyl or phenoxymethyl, or also amino, C_{1-20} alkylamino, C_{3-4} alkenylamino, di-C_{1-20}-alkylamino, di-C_{3-14}-alkenylamino, C_{5-7} cycloalkylamino, di-C_{5-7}-cycloalkylamino, C_{6-18} arylamino, (C_{1-8} alkylphenyl)-amino, (halophenyl)amino, (hydroxyphenyl)amino or (C_{1-8} alkylhydroxyphenyl)amino, while the amino group can also be N-substituted by C_{1-8} alkyl, or a radical of the formula IVa



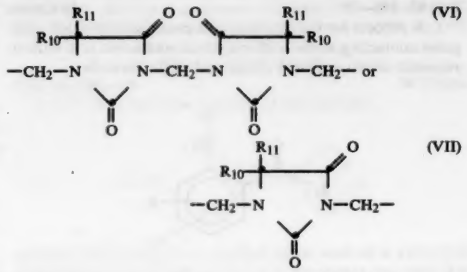
(IVa)

in which R_4 is hydrogen or methyl, R_{16} is hydrogen, C_{1-16} alkyl, C_{3-8} alkenyl, propargyl, C_{7-16} aralkyl, C_{1-4} alkanoyl, C_{3-5} alkenoyl, C_{3-6} β-hydroxyalkyl, C_{8-12} β-hydroxyaralkyl, (C_{1-4} alkoxycarbonyl) methyl, oxyl or 2-hydroxy-3-phenoxypropyl, and Z is O, NH or N(C_{1-12}alkyl);
when n is 2, R_1 is —O—R_3—O—, in which R_3 is C_{2-20} alkylene, C_{4-8} alkenylene, C_4 alkynylene, C_{5-6} cycloalkylene, C_{6-10} arylene or C_{7-16} aralkylene, or also



(V)

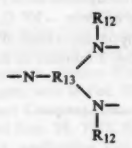
in which R_4 is hydrogen or methyl and R_5 is 2-butenylene, p-phenylenedimethylene, or —N(R_6)—R_7—N(R_6)—, in which R_6 is hydrogen, C_{1-6} alkyl, C_{3-5} alkenyl, C_{5-6} cycloalkyl, phenyl, C_{7-12} aralkyl or 2,2,6,6-tetramethylpiperidin-4-yl with hydrogen, methyl or benzyl substituted at the piperidine nitrogen atom and R_7 is C_{2-12} alkylene, C_{3-12} oxalkylene, C_{3-12} azalkylene, C_{6-12} arylene, C_{8-15} aralkylene or C_{5-6} cycloalkylene, or also —O—CH_2—C(OH)(R_8)—R_9—C(OH)(R_8)—CH_2—O—, in which R_8 is hydrogen or methyl, or in which the radicals R_8 together with the radical to which they are linked can form a 5- or 6-membered cycloalkyl ring, and in which R_9 is a direct bond, C_{1-6} alkylene or C_{3-6} oxalkylene or in which R_9 is VI or VII



(VI)

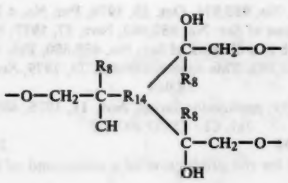
(VII)

and R_{10} and R_{11} are hydrogen or C_{1-4} alkyl, or R_{10} and R_{11} together are tetramethylene or pentamethylene;
when n is 3, R_1 is a trioxy radical of a C_{3-20} alkanetriol in which one carbon atom is attached to not more than one oxygen atom, or also a radical VIII



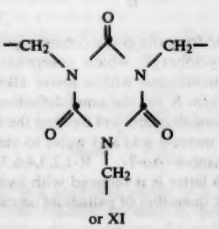
(VIII)

in which R_{12} is hydrogen, C_{1-4} alkyl, C_{3-5} alkenyl, phenyl or benzyl, and in which R_{13} is a trivalent radical of C_{3-20} alkyl, C_{6-12} aryl or C_{7-16} aralkyl, or also a radical IX



(IX)

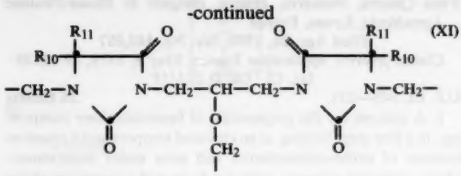
in which R_8 is hydrogen or methyl or two radicals R_8 together with the radical to which they are linked form a 5- or 6-membered cycloalkyl ring, and in which R_{14} is a trivalent radical of C_{3-18} alkyl, or R_{14} is X



(X)

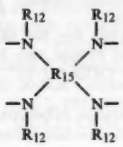
or XI

-continued



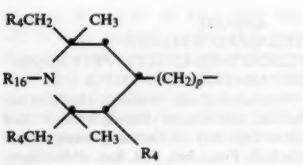
(XI)

in which R_{10} and R_{11} are hydrogen or C_{1-4} alkyl, or R_{10} and R_{11} together are tetramethylene or pentamethylene; and when n is 4, R_1 is a tetroxy radical of a C_{4-20} alkanetetraol in which one carbon atom is attached to not more than one oxygen atom, or also a radical XII

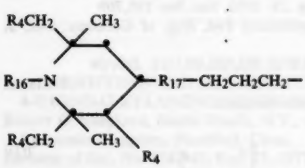


(XII)

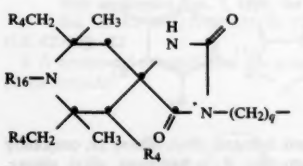
in which R_{12} is hydrogen, C_{1-4} alkyl, C_{3-5} alkenyl, phenyl or benzyl and R_{15} is a tetravalent radical of C_{3-20} alkyl, C_{6-12} aryl or C_{7-16} aralkyl;
X-Pip is a radical of the formulae XIII–XX



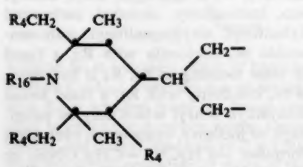
(XIII)



(XIV)



(XV)



(XVI)

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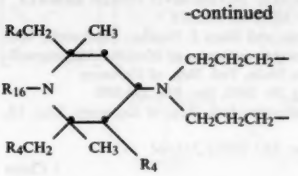
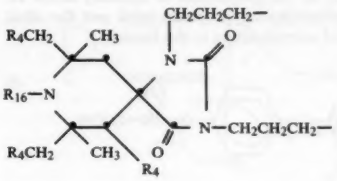
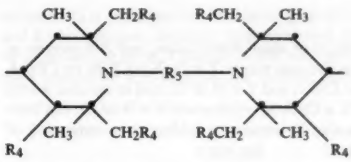


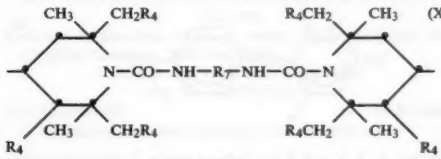
(XVII)



(XVIII)

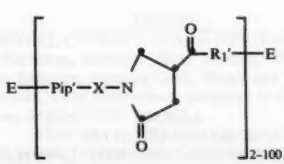


(XIX)

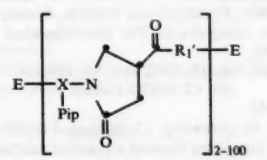


(XX)

in which R_4, R_5, R_7 and R_{16} are as previously defined, R_{17} is oxygen or NR_{18} with R_{18} being hydrogen, methyl, benzyl, allyl or C_{2-5} alkanoyl, p is 0 or 2 and q is 2, 3, 4 or 5;
or the oligomers or polymers of said pyrrolidones corresponding to the formulae III or IV



(III)



(IV)

wherein X—Pip is as defined above, X—Pip′ corresponds to X—Pip, R_1′ corresponds to the radical R_1 and E is hydrogen or C_{1-6} alkoxy.

9. Pentaerythritol tetra-[1-(1,2,2,6,6-pentamethyl-4-piperidinyl)-2-pyrrolidone-4-carboxylate] according to claim 1.

4,309,547

PROCESS FOR THE PREPARATION OF PHENOXYPROPIONIC ACIDS AND THEIR ALKALI METAL SALTS

Manfred Koch, Eppstein, and Hans J. Nestler, Königstein, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

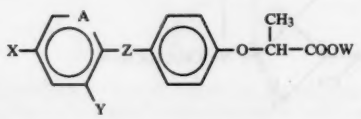
Filed May 30, 1980, Ser. No. 155,009

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1979, 2949728

Int. Cl.³ C07D *213/44*

U.S. Cl. 546—301 1 Claim

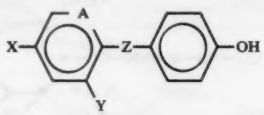
1. In a process for the preparation of optically active D-(phenoxy- or benzyl)-phenoxypropionic acids and the alkali metal salts thereof corresponding to the formula I



(I)

in which

W is hydrogen or an alkali metal cation, and Z is oxygen or CH_2, and in the case where Z is O, X is Cl, Br or CF_3; A is —N= or CH=; and Y is H or Cl; and in the case where Z is CH_2, X is Cl; A is —CH= and Y is H or Cl; and their optically active D-isomers by adding to a compound of the formula II



(II)

in which A, X Y and Z are defined above, 2-chloropropionic acid or 2-chloropropionic acid lower alkyl ester or the D-isomers thereof in a solvent forming an azeotropic mixture with water and at reflux temperature, the improvement comprising (a) reacting an aqueous alkali hydroxide in double molar amount, relative to the chloropropionic acid component, or a slight excess thereover, and (b) simultaneously distilling off the water introduced or formed during the reaction.

4,309,548

CHLORINATION OF 2-CHLORO-5-TRICHLOROMETHYLPYRIDINE

Charles A. Wilson, Pittsburg, and John A. Werner, Antioch, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 19, 1981, Ser. No. 225,824

Int. Cl.³ C07D *213/26*

U.S. Cl. 546—345 4 Claims

1. A process for preparing 2,3-dichloro-5-trichloromethylpyridine which comprises treating a reaction mixture containing 2-chloro-5-trichloromethylpyridine and a solvent or solvent mixture principally composed of N-methylpyrollidone, N,N-dimethylformamide, or dimethylsulfoxide with an excess amount of chlorine at a temperature of from about 55° C. to about 120° C. for a time sufficient to chlorinate at least some of the 2-chloro-5-trichloromethylpyridine to form 2,3-dichloro-5-trichloromethylpyridine.

4,309,549

BENZOXAZOLONE PREPARATION

Yvon Querou, Nanterre, France, assignor to Rhone-Poulenc Agrochimie, Lyons, France

Filed Apr. 25, 1980, Ser. No. 143,857

Claims priority, application France, May 8, 1979, 79 12139

Int. Cl.³ C07D *263/58*

U.S. Cl. 548—221 26 Claims

1. A process for the preparation of benzoxazolone comprising, in a first step, heating at an elevated temperature a reaction mixture of ortho-chlorophenol and urea under superatmospheric ammonia pressure until the degree of conversion of the ortho-chlorophenol has essentially stabilized, and thence continuing heating the medium of reaction at an elevated temperature in a second step, but under atmospheric pressure.

4,309,550

BENZOXAZOLONE PREPARATION

Yvon Querou, Nanterre, France, assignor to Rhone-Poulenc Agrochimie, Lyons, France

Filed Apr. 25, 1980, Ser. No. 143,859

Claims priority, application France, May 8, 1979, 79 12140

Int. Cl.³ C07D *263/58*

U.S. Cl. 548—221 23 Claims

1. A process for the preparation of benzoxazolone, comprising, in a first step, heating ortho-chlorophenol at an elevated temperature under superatmospheric ammonia pressure until the degree of conversion of the ortho-chlorophenol has essentially stabilized, and thence, in a second step, adding urea to the medium of reaction and continuing heating same at an elevated temperature, but under atmospheric pressure.

4,309,551

QUATERNIZED, BRIDGED BENZIMIDAZOLYLBENZIMIDAZOLES, PROCESSES FOR THEIR PREPARATION AND THEIR USE

Norbert Schönberger, Wehrheim; Erich Schinzel, Hofheim am Taunus; Thomas Martini, and Günter Rösch, both of Bad Soden am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

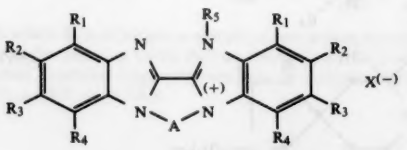
Filed Sep. 29, 1980, Ser. No. 191,709

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1979, 2939916

Int. Cl.³ C07D *235/30, 487/31, 235/04*

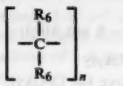
U.S. Cl. 548—324 5 Claims

1. A compound of the formula



[(I)]

wherein R_1 is hydrogen, halogen, alkyl, alkoxy or, conjointly with R_2, a fused benzo ring, R_2 is hydrogen, alkyl, alkoxy, halogen, phenyl, cyano, carboalkoxy, carboxyl, carbamoyl dialkylcarbamoyl, alkylsulfonyl, alkyloxysulfonyl, sulfonamido, or dialkylsulfonamido or, conjointly with R_3, a fused benzo ring, R_3 has the same meaning as R_2, R_4 is hydrogen, alkyl, alkoxy, halogen or, conjointly with R_3, a fused benzo ring, R_5 is alkyl, hydroxyalkyl, benzyl which may be substituted by chlorine, methyl, or methoxy, cyanoethyl, cycloalkyl or a group of the formulae —CH_2CN, —CH_2CONH_2 or —CH_2COO-alkyl, A denotes a group of the formulae



or

$-(CH_2)_4-$.

R_6 is hydrogen, alkyl, hydroxyalkyl, alkoxyalkyl, benzyl or optionally substituted phenyl wherein the substitutents are selected from the group consisting of halogen, alkyl or cyano, n is 1, 2 or 3 and $X^{(-)}$ is a halide, alkylsulfonate, alkylsulfate, or phenylsulfonate ion and wherein said alkyl and alkoxy groups consist of 1–4 carbon atoms.

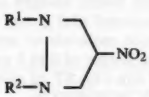
4,309,552

SYNTHESIS OF 4-NITRO-1,2-HYDROCARBYL PYRAZOLIDINES AND PROCESS FOR PREPARATION THEREOF

Young S. Lo, and Harry R. Munson, Jr., both of Richmond, Va., assignors to A. H. Robins Company, Inc., Richmond, Va.

Filed Aug. 7, 1980, Ser. No. 176,175
Int. Cl.³ C07D *231/04*
U.S. Cl. 548—356 **7 Claims**

1. A compound selected from those having the formula:



wherein; R^1 and R^2 are loweralkyl radicals containing from one to eight carbons, cyclic alkyl radicals containing from three to twelve carbons, or phehylloweralkyl wherein the loweralkyl group contains from one to eight carbons and the phenyl may be substituted with a nonreactive radical selected from the group consisting of lower alkyl, lower alkoxy, trifluoromethyl, halo, acetamido and sulfamoyl, and may be the same or different.

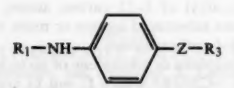
4,309,553

ALDEHYDES AND KETONES CONTAINING A 4-(MONOALKYLAMINO)-BENZOYL SUBSTITUENT

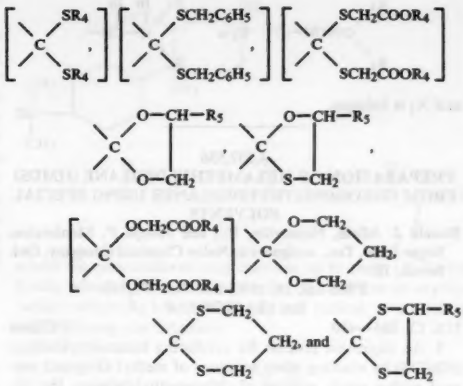
Robert G. Shepherd, South Nyack, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 836,947, Sep. 27, 1977, Pat. No. 4,273,785. This application Jun. 3, 1980, Ser. No. 156,144
Int. Cl.³ C07D *317/28, 319/06, 327/04, 329/08*
U.S. Cl. 549—22 **8 Claims**

1. A compound selected from the group consisting of those of the formula:



wherein R_1 is a straight chain or branched alkyl group of the formula C_nH_{2n+1} wherein n is an integer from 8 to 19, inclusive; R_3 is selected from the group consisting of hydrogen, alkyl having up to 6 carbon atoms, lower alkanoy-oxymethyl, phenyl, and phenyl lower alkyl; Z is a divalent radical selected from the group consisting of those of the formulae:



wherein R_4 is hydrogen or alkyl having up to 4 carbon atoms and R_5 is hydrogen, carboxy, carboxymethyl, hydroxymethyl or alkyl having up to 3 carbon atoms; and the pharmacologically acceptable acid-addition and cationic salts thereof.

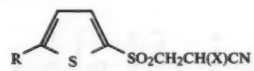
4,309,554

3-(2-THIOPHENESULFONYL)-2-HALOPROPANENITRILES

Christian T. Goralski, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 28, 1980, Ser. No. 144,485
Int. Cl.³ C07D *333/34*
U.S. Cl. 549—62 **5 Claims**

1. A compound corresponding to the formula



wherein R represents one of H, C_{1-4} alkyl, Cl and Br and X represents Cl or Br.

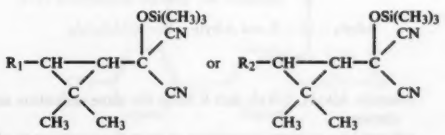
4,309,555

NOVEL CYCLOPROPANE DERIVATIVES

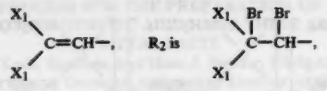
Peter Ackermann, Reinach; Jozef Drabek, Oberwil; Saleem Farooq, Ettingen; Laurenz Gsell, Basel, and Rudolf Wehrli, Rheinfelden, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 9, 1980, Ser. No. 214,814
Claims priority, application Switzerland, Dec. 21, 1979, 11407/79; Jun. 20, 1980, 4751/80; Oct. 27, 1980, 7995/80
Int. Cl.³ C07F *7/10, 7/18*
U.S. Cl. 556—417 **6 Claims**

1. A 1-(dicyano-trimethylsiloxy)methyl-2,2-dimethylcyclopropane derivative of the formula



wherein R_1 is



and X_1 is halogen.

4,309,556

PREPARATION OF HEXAMETHYLDISILANE (HMDS) FROM CHLOROMETHYLDISILANES USING SPECIAL SOLVENTS

Ronald J. Allain, Naperville, Ill., and Joseph P. Maniscalco, Sugar Land, Tex., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Jul. 24, 1980, Ser. No. 171,768

Int. Cl.³ C07F 7/08

U.S. Cl. 556—430 **3 Claims**

1. An improved process for producing hexamethyldisilane (HMDS) by reacting ether solutions of methyl Grignard reagent with a crude mixture of chloromethyldisilanes, the improvement which comprises obtaining higher yields and simplified purification of HMDS by the use of mixed ether solvent systems composed of tetrahydrofuran and the diethyl ether of tetraethylene glycol.

4,309,557

PROCESS FOR THE PREPARATION OF ALKYL AND ARYL SUBSTITUTED OLIGOSILOXANES SUITABLE FOR USE AS DIFFUSION PUMP OILS

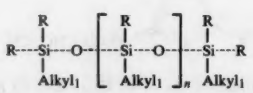
Richard A. Compton, Santa Barbara, and Del J. Petraitis, Goleta, both of Calif., assignors to NuSil Research, Carpinteria, Calif.

Filed Feb. 12, 1981, Ser. No. 234,027

Int. Cl.³ C07F 7/08, 7/18

U.S. Cl. 556—453 **56 Claims**

1. A process for preparing compounds of the general formula:



wherein

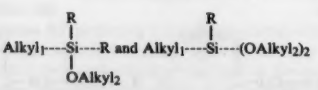
n equals 0 or 1,

$Alkyl_1$ is an alkyl group having 1–2 carbons and R is an aryl, or alkylaryl group said alkylaryl group having 1–2 carbons in the alkyl chain,

the process comprising the steps of:

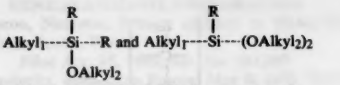
reacting a compound of the general formula of $Alkyl_1—Si—(OAlkyl_2)_3$

wherein $Alkyl_1$ is defined as above and $Alkyl_2$ is an alkyl group having 1–6 carbon atoms, with a Grignard reagent derived from a compound having the general formula of R—X, wherein R is defined as above and X is Cl, Br or I, said reaction with the Grignard reagent giving rise to a mixture containing the compounds of the following two general formulae:



wherein $Alkyl_1$, $Alkyl_2$ and R have the same definition as above;

subjecting a mixture containing at least the compounds of the two general formulae:



to hydrolysis to remove the $OAlkyl_2$ groups, and

substantially simultaneously with said hydrolysis allowing condensation of the respective siloxanes moieties to occur.

4,309,558

METHOD FOR PRODUCING SUBSTITUTED DICHLOROSILANE

Isao Koga, Yokohamashi; Yohji Terui, Chibashi, and Masuhito Ohgushi, Minamatashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Continuation-in-part of Ser. No. 884,930, Mar. 9, 1978, abandoned. This application Sep. 5, 1979, Ser. No. 72,590

Claims priority, application Japan, Mar. 23, 1977, 52-31732; Mar. 23, 1977, 52-31733

Int. Cl.³ C07F 7/08

U.S. Cl. 556—479 **7 Claims**

1. A method for producing a mono-substituted dichlorosilane which comprises reacting dichlorosilane H_2SiCl_2 with a vinylidene compound represented by the general formula $R^1R^2C{=}CH_2$ (wherein R^1 and R^2 are each hydrogen, an alkyl group of 1–18 carbon atoms or a phenyl group and are the same or different) in the presence of a catalyst which is a homogeneous complex represented by the general formula $MX_n(PR^*_3)_m$ wherein R* is aryl, alkyl or aralkyl; M is ruthenium; X is a covalently bound halogen or hydrogen atom, a covalently bound substituted silyl group, or a non-covalently bound carbon monoxide molecule or aromatic hydrocarbon compound; and n is an integer of 0 to 4 and m is an integer of 2 to 4 provided that $3 \leqq (n+m) \leqq 7$ to give a compound of the general formula $R^1R^2CHCH_2SiHCl_2$.

4,309,559

SULPHONAMIDES USEFUL AS PESTICIDES

Geoffrey R. Cliff, Whittlesford, England, assignor to FBC Limited, Hauxton, England

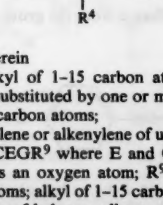
Filed Dec. 14, 1978, Ser. No. 969,375

Claims priority, application United Kingdom, Dec. 24, 1977, 53902/77

Int. Cl.³ C07C 147/13

U.S. Cl. 560—12 **8 Claims**

1. A compound which is a sulphonanilide of the formula



or salt thereof, wherein

R^1 represents alkyl of 1–15 carbon atoms; alkyl of 1–15 carbon atoms substituted by one or more of halogen, and alkoxy of 1–6 carbon atoms;

R represents alkylene or alkenylene of up to 6 carbon atoms;

A represents —CEGR⁹ where E and G are the same and each represents an oxygen atom; R^9 represents alkyl of 1–15 carbon atoms; alkyl of 1–15 carbon atoms substituted by one or more of halogen, alkoxy of 1–6 carbon atoms, hydroxy, amino and amino mono or di-substituted by groups selected from alkyl of 1–15 carbon atoms and alkanoyl of 2–7 carbon atoms; phenylalkyl of 7–10 carbon atoms; phenylalkyl of 7–10 carbon atoms substituted on

the phenyl nucleus by one or more of halogen, alkyl of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, nitro, and trifluoromethyl; cycloalkyl of 3–7 carbon atoms; phenyl; or phenyl substituted by one or more of halogen, alkyl of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, nitro, and trifluoromethyl; and

R^2, R^3, R^4, R^5 and R^6 are the same or different and each represents a hydrogen atom; alkyl of 1–15 carbon atoms; alkyl of 1–15 carbon atoms substituted by one or more of halogen, alkoxy of 1–6 carbon atoms, hydroxy, amino and amino mono- or di-substituted by groups selected from alkyl of 1–15 carbon atoms and alkanoyl of 2–7 carbon atoms; hydroxy; alkoxy of 1–6 carbon atoms; nitro; a halogen atom; amino; amino or mono- or di-substituted by groups selected from alkyl of 1–15 carbon atoms and alkanoyl of 2–7 carbon atoms.

4,309,560

MODIFIER FOR FIBERS OR FIBROUS STRUCTURES

Kiyoshi Aoki, Hirakata, and Saburo Ohara, Kyoto, both of Japan, assignors to Kanebo, Ltd., Tokyo and Kanebo Synthetic Fibers Ltd., Osaka, both of, Japan

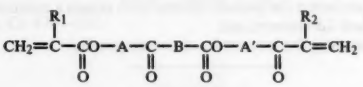
Filed Jun. 20, 1980, Ser. No. 161,717

Claims priority, application Japan, Nov. 26, 1979, 54-153268

Int. Cl.[3] **C07C** *143/525, 69/80, 69/82, 69/593, 69/60*

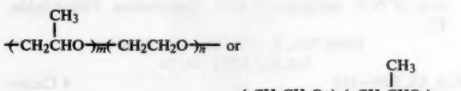
U.S. Cl. 560—14 **13 Claims**

1. A modifier for fibers or fibrous structures, which consists of a compound represented by the general formula (I)

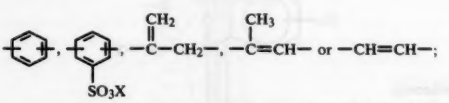


(I)

wherein R_1 and R_2 represent H or CH_3; A and A′ represent



B represents



X represents H, NH_4 or an alkali metal; and m and n represent numerals determined by the following formulae, $0 \leqq m \leqq 25$, $5 \leqq n \leqq 50$ and $5 \leqq (m+n) \leqq 50$.

4,309,561

PHOTOPOLYMERIZABLE ACRYLATE MONOMERS

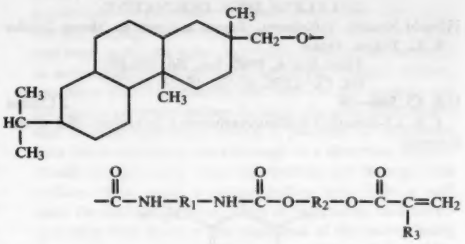
Thomas F. Huemmer, and Pallavoor R. Lakshmanan, both of Houston, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Jun. 20, 1980, Ser. No. 161,612

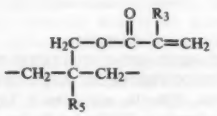
Int. Cl.[3] **C07C** *125/073;* **C08F** *236/00*

U.S. Cl. 560—26 **10 Claims**

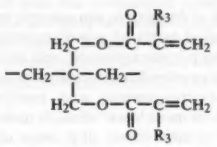
1. A copolymerizable acrylate monomer useful as a component of U.V. curable resin compositions and anaerobic adhesive compositions which has the structure:



where the phenanthrene ring contains up to three (3) double bonds, where R_1 is a divalent isophorone alkylene or arylene radical, where R_2 is a divalent alkylene radical, or a divalent radical having the structure:



or a divalent radical having the structure:



where R_3 is hydrogen or a methyl group and where R_5 is an alkyl group.

4,309,562

HERBICIDAL COMPOUND, HERBICIDAL COMPOSITION CONTAINING THE SAME, AND METHOD OF USE THEREOF

Ryohei Takahashi, Kusatsu; Kanichi Fujikawa, Kyoto; Isao Yokomichi, Kusatsu; Sinzo Someya, Kusatsu, and Nobuyuki Sakashita, Kusatsu, all of Japan, assignors to Ishihara Sangyo Kaisha, Ltd., Osaka, Japan

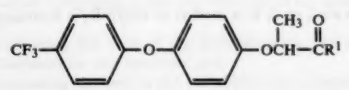
Division of Ser. No. 596,784, Jul. 17, 1975. This application Apr. 15, 1977, Ser. No. 788,068

Claims priority, application Japan, Jul. 17, 1974, 49-82403; Jul. 17, 1974, 49-82404; Oct. 14, 1974, 49-117047

Int. Cl.[3] **C07C** *69/76;* **A01N** *37/38*

U.S. Cl. 71—108 **6 Claims**

1. A compound having the formula:



wherein R^1 is an n-butoxy ethoxy group or an ethoxyethoxyethoxy group.

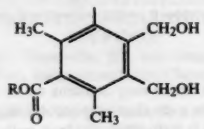
4,309,563

XYLYLENE DIOL DERIVATIVE

Hiroshi Suzuki, Yokohama, Japan, assignor to Showa Denko K.K., Tokyo, Japan

Filed Jun. 4, 1980, Ser. No. 156,351
Int. Cl.³ C07C *69/76, 69/78, 69/767*
U.S. Cl. 560—64 **2 Claims**

1. A 3,5-dimethyl-4-alkoxycarbonyl-1,2-xylylene diol of the formula



wherein R is an alkyl group having 1 to 4 carbon atoms.

4,309,564

METHODS FOR PREPARING EUTECTIC MIXTURES OF P-HYDROXYBENZOIC ACID ESTERS

Donald F. Loncrini, Ellisville, and John J. Taylor, St. Peters, both of Mo., assignors to Mallinckrodt, Inc., St. Louis, Mo.

Filed Oct. 23, 1980, Ser. No. 199,719
Int. Cl.³ C07C *69/88*
U.S. Cl. 560—67 **28 Claims**

1. The method of forming in situ eutectic mixtures of three or more lower alkyl esters of p-hydroxybenzoic acid which comprises reacting p-hydroxybenzoic acid and a lower alkanol in the presence of an esterification catalyst to form a first lower alkyl ester of p-hydroxybenzoic acid, reacting the resulting mixture with two or more lower alkanols under heat to form a mixture of three or more lower alkyl esters of p-hydroxybenzoic acid, quenching the reaction when the ratio of the respective lower alkyl esters of p-hydroxybenzoic acid to each other is such that the mixture thereof is liquid at room temperature and isolating the resulting eutectic mixture.

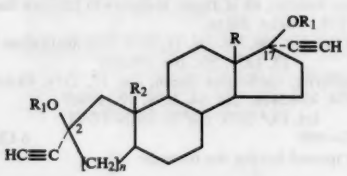
4,309,565

PROCESS FOR SYNTHESIZING A-NOR AND A-NOR-18-HOMO-STEROIDS

Pierre Crabbe, Columbia, Mo., assignor to World Health Organization, Geneva, Switzerland

Filed Apr. 15, 1980, Ser. No. 140,598
Claims priority, application France, Aug. 14, 1979, 79 20926
Int. Cl.³ C07C *69/76, 67/02*
U.S. Cl. 560—107 **1 Claim**

1. A process for preparing A-nor and A-nor-18-homo-steroids of the formula:

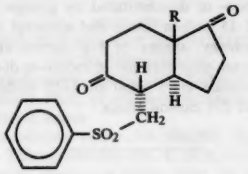


I

wherein n=1 or 0, R is methyl or ethyl; R_1 is hydrogen or

wherein A is lower alkyl, cyclo-alkyl or aryl; and R_2 is hydrogen or methyl which comprises

(a) reacting an optically active trans-fused bicyclic diketo-sulfone of the formula:



with a 6-(1,3-dioxolan-2-yl)-3-oxoheptanoic acid methyl ester or with a 5-(1,3-dioxolan-2-yl)-3-oxohexanoic acid methyl ester to obtain a triketo derivative;

(b) hydrolyzing, cyclizing and decarboxylating the product of step (a) to obtain an enone;

(c) catalytically hydrogenating said enone to obtain a dione;

(d) acid hydrolyzing to obtain a trione;

(e) cyclizing the product of step (d) to obtain a mixture of isomeric enones;

(f) subjecting said mixture to Birch reduction and oxidation to obtain the corresponding saturated 2,17-dione with the A:B trans stereochemistry;

(g) ethynylating the product of step (f) to obtain a mixture of 2α- and 2β-isomers; and

(h) separating the isomers by chromatography.

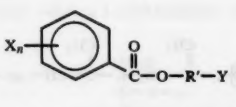
4,309,566

PLANT REGULATOR

Marvin J. Konz, Lockport, and Norman E. Krog, Middleport, both of N.Y., assignors to FMC Corporation, Philadelphia, Pa.

Filed Nov. 5, 1979, Ser. No. 91,604
Int. Cl.³ C07C *69/76*
U.S. Cl. 560—110 **4 Claims**

1. A compound of the formula



wherein

R′ is straight or branched alkylene of 1 to 4 carbons;

Y is

Z is —NH_2, —NHR, —NR_1R_2, —NH—NR_1R_2;

R_1 and R_2 are the same or different and are alkyl of 1 to 4 carbons or phenyl;

X is chlorine, occurring in the 2- and 6-positions in the benzene ring;

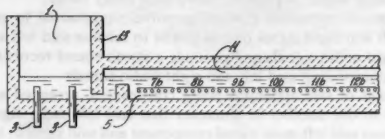
n is 2.

4,309,567

FURNACE FOREHEARTH ELECTRODE GROUPS HAVING LESS THAN 90° PHASE DIFFERENCE BETWEEN ADJACENT GROUPS

Michael Williamson, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Mar. 12, 1979, Ser. No. 19,389
Int. Cl.[3] C03B 5/02
U.S. Cl. 13—6 11 Claims



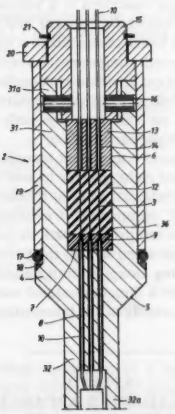
1. A method of heating a molten material flowing in a forehearth of a furnace, said method comprising the steps of: positioning a plurality of sets of opposed electrodes in the forehearth; connecting separate sources of power to each of said sets of electrodes, said separate sources being phase related and connected to produce a phase angle relationship between adjacent electrode sets of not greater than 90°.

4,309,568

BUSHING FOR ELECTRICAL LEADS

Sven-Erik Isaksson, Robertsfors, Sweden, assignor to ASEA Aktiebolag, Vesteras, Sweden

Filed Dec. 29, 1977, Ser. No. 865,683
Claims priority, application Sweden, Jan. 21, 1977, 7700615
Int. Cl.[3] H01B 17/30
U.S. Cl. 174—151 3 Claims



1. An electrical bushing to facilitate the passage of elongated conductor elements through a pressure barrier comprising:

an elongated bushing casing adapted for longitudinal insertion in an opening extending through a pressure barrier and having shoulder means thereon adapted for abutment against corresponding shoulder means in said opening to thereby establish and fix the positioning of the casing in the opening relative to the barrier, said casing having a centrally disposed bore extending longitudinally therethrough from one end thereof that is intended for placement at the high pressure side of said barrier and terminating in said casing at a point between the ends of the latter thereby presenting a bottom for the bore which normally faces toward said high pressure side of the barrier when the casing is inserted in the opening, said casing also having a plurality of individual bore holes extending longitudinally through the casing from the other end thereof that is intended for placement on the low pressure side of the barrier, through said bottom and into communication with said bore, said bore holes each being of sufficient diameter to accommodate an insulated conductor element therein;

an insulator plate disposed in said bore on said bottom and presenting an upper surface facing in the same direction as said bottom, said plate having a plurality of individual bore holes extending therethrough in a direction longitudinally of the casing from said bottom and through said surface, there being a corresponding bore hole in said plate for each of the bore holes of the casing, said corresponding bore holes of the plate and of the casing being disposed in longtiduinal alignment, said bore holes of the plate each having a first length adjacent said surface which is smaller in diameter than the remaining length thereof, each said remaining length having a diameter which is substantially the same as the diameter of the corresponding bore hole of the casing for accommodating an insulated conductor element therein, said first lengths each having a diameter suitable for accommodating an uninsulated conductor element therein; and

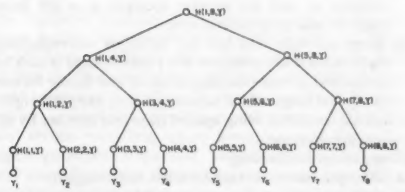
a deformable, resilient, elastic plug disposed in said bore on said surface of the plate, said plug being of a shape and size to sealingly contact the inner peripheral surface of said bore adjacent said surface of the plate and being adapted for having uninsulated conductor elements inserted therethrough in a manner such that the material of the plug will be in contact with the uninsulated conductor elements, whereby when said plug is forced toward said plate, the plug tends to expand laterally and into sealing contact with respect to said peripheral surface and the uninsulated conductor elements when extending through the plug.

4,309,569

METHOD OF PROVIDING DIGITAL SIGNATURES

Ralph C. Merkle, Mountain View, Calif., assignor to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Sep. 5, 1979, Ser. No. 72,363
Int. Cl.[3] H04L 9/00
U.S. Cl. 178—22.08 4 Claims



3. A method of authenticating an item in a list of items comprising the steps of:

defining an authentication tree with an authentication tree function comprising a one way function of the items in the list;

authenticating the root of the authentication tree and the authentication tree function; and

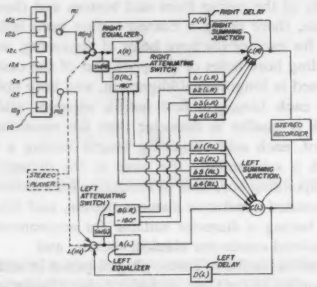
authenticating the item in the list of items by computing the authentication path of the authentication tree between said item and the root of the authentication tree.

4,309,570

DIMENSIONAL SOUND RECORDING AND APPARATUS AND METHOD FOR PRODUCING THE SAME

Robert W. Carver, P.O. Box 664, Woodinville, Wash. 98072

Filed Apr. 5, 1979, Ser. No. 27,473
Int. Cl.³ H04S *1/00*
U.S. Cl. 179—1 G **65 Claims**



1. An apparatus for producing a dimensionalized sound recording adapted to utilize stereo signals which are characterized in that said signals are non- binaural signals having either a phase shift relationship between corresponding signal components, which phase shift relationship has a time delay distance greater than a time delay distance of a binaural phase shift for an ear spacing distance of a listener, or an amplitude difference greater than binaural amplitude differences of corresponding signal components, where the sound recording is adapted to be used in conjunction with a stereo player and a pair of speakers, where the following conditions exist:

a. there is a playing area,

b. in said playing area there is a forward transmitting area where there are right and left speakers connected to the stereo player and positioned at right and left speaker locations on a base axis and spaced from one another on said base axis by a speaker spacing distance,

c. there is a longitudinal axis positioned equally distant from said speaker locations and perpendicular to said base axis,

d. there is a listening area at the center of which is a listening location positioned on said longitudinal axis rearwardly of said base axis,

e. there is a right listening axis extending from said listening location to said right speaker location at a right listening angle to said longitudinal axis,

f. there is a left listening axis extending from said listening location to said left speaker location at a left listening angle to said longitudinal axis,

g. there are right and left ear locations corresponding to right and left ear positions of a person's head which could be located at said listening location and facing forwardly along said longitudinal axis to said base axis, said right and left ear locations being spaced from one another by an ear spacing distance,

said apparatus comprising:

a. left input means to receive a left stereo signal,

b. right input means to receive a right stereo signal,

c. left signal output means to produce a left audio signal,

d. right signal output means to produce a right audio signal,

e. left main transmitting means to transmit a left main signal component, corresponding and similar to the left stereo signal, to the left signal output means,

f. right main transmitting means to transmit a right main signal component, corresponding to and similar to the right stereo signal, to the right signal output means,

g. left to right compensating means adapted to receive said left stereo signal to produce an inverted and delayed left to right compensating signal corresponding to said left stereo signal, and to transmit said left to right compensating signal to said right signal output means,

h. right to left compensating means adapted to receive said right stereo signal to produce an inverted and delayed right to left compensating signal corresponding to said right stereo signal, and to transmit said right to left compensating signal to said left signal output means,

i. said two compensating signals each being delayed relative to corresponding main signal components by a time delay period within a predetermined time delay range,

j. a stereo recording device operatively connected to said left and right signal output means to receive said left and right audio signals and produce a stereo sound recording incorporating said left and right audio signals

the means of said apparatus being constructed, arranged and related to one another in a manner that said left audio signal comprises said left main signal component and said right to left compensating signal, and said right audio signal comprises said right main signal component and said left to right compensating signal, so that when said stereo recording is played on a stereo player connected to right and left speakers, said left audio signal drives the left speaker and said right audio signal drives the right speaker so that the following occurs

a. there is a left audio signal having a main left sound component and a right to left compensating sound component, said left audio output having a primary path component from said left speaker to said left ear location, and a secondary path component from said left speaker to said right ear location,

b. there is a right audio output having a main right sound component and a left to right compensating sound component, said right audio output having a primary path component from said right speaker to said right ear location, and a secondary path component from said right speaker location to said left ear location,

c. the main left sound component reaches the left ear location without being cancelled to a substantial amount,

d. the right main sound component reaches the right ear location without being cancelled to a substantial amount,

e. the main left sound component travelling its secondary path to said right ear location is cancelled to a substantial amount by the left to right compensating sound component travelling on the primary path from said right speaker to said right ear location,

f. the main right sound component travelling on the secondary path from said right speaker to said left ear location is cancelled to a substantial amount by the right to left compensating sound component travelling from said left speaker along the left primary path to the left ear location,

whereby a person positioned so that the person's head is at the listening location facing along the longitudinal axis toward the transmitting area hears a dimensionalized sound with apparent sound sources being outside of the transmitting area of the two speakers.

4,309,571

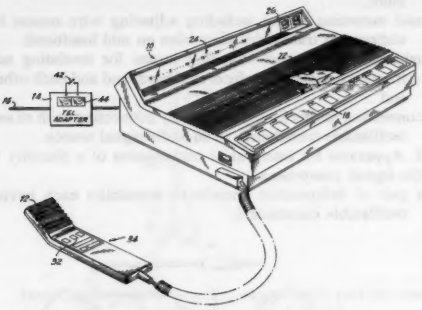
TELEPHONE-ADAPTER APPARATUS FOR A DICTATION UNIT

David B. Chamberlin, Milford, Conn., assignor to Dictaphone Corporation, Rye, N.Y.

Filed May 5, 1980, Ser. No. 146,779
Int. Cl.³ H04M *11/10*
U.S. Cl. 179—6.09 **27 Claims**

1. Apparatus for operating a dictation unit, having a movable record medium upon which dictated information normally is recorded, as a telephone-answering device wherein an announce message is recorded at a predetermined portion of said record medium; said apparatus comprising switch means selectively operable to condition said dictation unit to operate as a telephone-answering device; means for connecting said dictation unit to a telephone line; activate means operable when said dictation unit is conditioned to operate as a telephone-answering device to respond to an incoming ringing

signal on said telephone line for activating said movable record medium to advance at a playback speed so as to transmit said announce message over said telephone line and, at the conclusion of said announce message, to selectively advance said



record medium at a relatively fast speed to the next available recording portion thereon to record an incoming telephone call message; and rewind means operable at the completion of each incoming telephone call to return said record medium to the beginning of said announce message.

4,309,572

CALL PROCESSING SYSTEM WITH AN OPERATOR ASSISTANCE IN A TELEPHONE SWITCHING SYSTEM

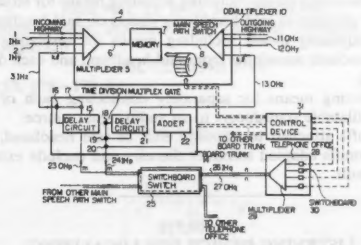
Hiromichi Mori, Kawasaki; Tatsuo Maruyama, Tokyo; Jun Matsumoto, Tama, and Yoshikazu Ikeda, Tama, all of Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Aug. 28, 1979, Ser. No. 70,399

Claims priority, application Japan, Sep. 8, 1978, 53-109767

Int. Cl.³ H04J *3/14*; H04M *3/20*

U.S. Cl. 179—27 FE **2 Claims**



1. A call processing apparatus in a telephone switching system having operator assistance, said apparatus comprising a main speech-path switch means connected to a plurality of incoming channels and a plurality of outgoing channels; a plurality of board trunk means, each of said board trunk means being coupled to said main speech-path switch means; at least one switch-board means; switchboard switch means for coupling said at least one switchboard means to one of said board trunk means; and control means coupled to said main speech-path switch means, said board trunk means and said switchboard means, for controlling the operation of said main speech-path switch means and said board trunk means in response to the operation of said switchboard means; wherein each of said board trunk means includes a switching means having a first state for coupling said switchboard switch means to one of said plurality of incoming channels through said main speech-path switch means, a second state for coupling said switch-board switch means to one of said plurality of outgoing channels through said main speech-path switch means, and a third state for coupling said switchboard switch means to only an incoming portion of said incoming and outgoing channels through said main speech-path switch means; said apparatus having a first mode of operation wherein said switchboard means is connected to one of said plurality of incoming channels and to one of said plurality of outgoing channels through said main speech-path switch means, one of said board trunk means, and said switchboard switch means, said switching means in said board trunk means being switched between its first and second states for connecting said switchboard means to either said incoming channel or said outgoing channel, thereby enabling an operator to assist in communication between said incoming and outgoing channels; said apparatus having a second mode of operation wherein said incoming channel is directly connected to said outgoing channel through said main speech-path switch means and said switchboard means is connected to the incoming portions of both said incoming and outgoing channels through said main speech-path switch means, said board trunk means and said switchboard switch means, said switching means in said board trunk means being in its third state, thereby enabling the operator to monitor said incoming and outgoing channel; said apparatus having a third mode of operation wherein said incoming channel is connected directly to said outgoing channel through said main speech-path switch means and said board trunk means is disconnected from the main speech-path switch means.

4,309,573

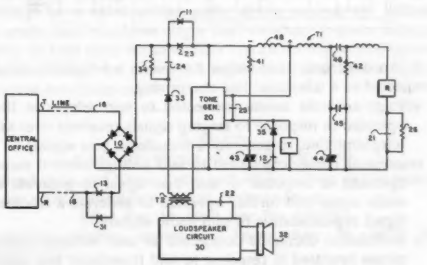
LOUDSPEAKING SUBSTATION CIRCUIT

Gary Grantland, Hartselle, and Larry A. Woodworth, Huntsville, both of Ala., assignors to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Apr. 7, 1980, Ser. No. 137,702

Int. Cl.³ H04M *1/60*

U.S. Cl. 179—81 B **5 Claims**



1. An improved loudspeaking substation circuit for use in a telephone system, said telephone system including a central office with a central office battery, a subscriber line connected to said central office, said battery and to a loudspeaking substation, said substation including a transmission circuit having a transmitter, a manually operable signal generator including first and second switching means arranged to operate when said signal generator is operated, and a hookswitch including first and second contacts connecting said substation and said transmission circuit respectively to said subscriber line in response to manual operation of said hookswitch, completing a loop circuit extending over said subscriber line for transmission of battery current of said substation, and dialing signals to said central office when said signal generator is operated, said improvement comprising:

shunting means manually selectable to provide an alternate path for completing said loop circuit;

a loudspeaking circuit coupled to said subscriber line and said transmission circuit including current steering means and a third hookswitch contact, said third contact arranged to connect said loudspeaking circuit to said transmission circuit for completing said loop circuit through

said loudspeaking and transmission circuits when said hookswitch is unoperated, and said current steering means steering said battery current around said transmitter prior to release of said second hookswitch contact for disconnecting said transmission circuit from said loop circuit and maintaining said loop circuit to said central office through said loudspeaking circuit; and

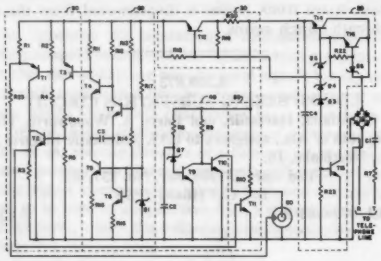
said signal generator when manually operated connecting said transmission circuit via said first switching means to said loop circuit and said second switching means disconnecting said transmitter from said transmission circuit, whereby said dialing signals are transmitted to said central office.

4,309,574

ELECTRONIC TONE RINGER

John D. Sublette, Huntsville, Ala., and William Stobbs, North Reading, Mass., assignors to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Apr. 15, 1980, Ser. No. 140,525
Int. Cl.³ H04M *1/00*
U.S. Cl. 179—84 T **11 Claims**



1. An electronic tone ringer for use in a telephone subset connected to a telephone line comprising:

voltage controls means connected to said telephone line, operated in response to ringing signals received over said telephone line, to generate a transducer bias signal;

transducer means connected to said voltage control means operated in response to said bias signal to generate an audio signal and further operated to generate a feedback signal representative of said audio signal;

a modulation oscillator connected to said voltage control means operated in response to said transducer bias signal to generate an oscillating control signal of a predetermined low frequency; and

modulation means connected to said modulation oscillator and to said transducer means, operated to modulate said feedback signal with said oscillating control signal, whereby said feedback signal is periodically and alternately enabled and inhibited;

said transducer means further operated in response to said periodically enabled feedback signal to periodically generate said audio signal.

4,309,575

APPARATUS FOR INTERCRANIAL TRANSMISSION OF AUDIO SIGNALS

Richard L. Zweig, Huntington Beach; Jack Schaefer, Brea, and Daniel G. Frank, Thousand Oaks, all of Calif., assignors to Therapeople, Inc., Whittier, Calif.

Filed Feb. 1, 1980, Ser. No. 117,749
Int. Cl.³ H04M *1/05;* H04R *25/00*
U.S. Cl. 179—107 BC **18 Claims**

1. Apparatus for intercranial transmission of a plurality of audio signals comprising:

a pair of independent transducer assemblies each having oscillatable transducers;

a headband conforming to the shape of the skull;

means for transmitting audio signals through the cranium and for mounting said transducer assemblies with the face of said oscillatable transducers pressed against the cranium;

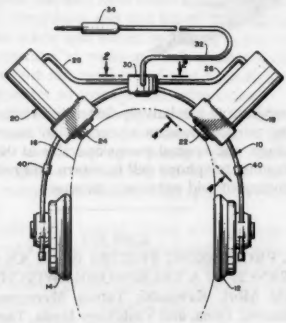
said mounting means including adjusting wire means for sliding said transducer assemblies on said headband;

said adjusting means including means for insulating said transducer assemblies from said headband and each other; and

connecting means for independently connecting each of said oscillatable transducers to an audio signal source.

2. Apparatus for intercranial transmission of a plurality of audio signals comprising

a pair of independent transducer assemblies each having oscillatable transducers;



a headband conforming to the shape of the skull;

mounting means mounting said transducer assemblies with the face of said oscillatable transducers pressed against the cranium;

said mounting means including adjusting means for adjusting the position of said transducer means on said headband;

said adjusting means including means for insulating said transducer assemblies from said headband and each other; and

connecting means for separately connecting each of said oscillatable transducers to an audio signal source;

earmuffs attached to opposite ends of said headband, said earmuffs adapted to cover the ears and exclude external stimuli.

4,309,576

LISTENING DEVICE FOR LOCALIZING UNDERGROUND WATER LEAKAGES

James E. Corrigan, Plymouth, Mass., assignor to Heath Consultants Incorporated, Stoughton, Mass.

Filed Jul. 16, 1979, Ser. No. 58,002
Int. Cl.³ G01M *3/16;* H01L *41/10;* H04R *1/02, 17/00*
U.S. Cl. 179—110 A **3 Claims**

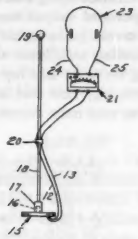
1. A listening device for pinpointing undergound water leakage sounds, and which includes an elongated rod with a handle on one end for manual positioning of the listening device, and which includes an acoustic pick-up means, on the other end of the rod, which is connected to an amplifier-receiver that receives the leakage sounds from the pick-up means and visual leakage signals may be seen on a level meter on the amplifier-receiver, and the leakage sounds may be heard through head-phones connected to the amplifier-receiver, characterized in that:

(a) the acoustic pick-up means comprises a ceramic audio tone transducer;

(b) the ceramic audio tone transducer comprises a brass diaphragm which is bonded to a metallized piezo-ceramic wafer by a conductive bonding agent;

(c) the brass diaphragm and metallized piezo-ceramic wafers are each circular in plan view, with the brass diaphragm having a larger diameter;

(d) a threaded attachment stud is directly attached to the



brass diaphragm for attaching the acoustic pick-up means to said other end of said elongated rod; and,

(e) the assembly of the brass diaphragm and metallized piezo-ceramic wafer is potted in a waterproof elastomeric material.

4,309,577

CIRCUIT FOR CLOSING THE REMOTE FEED LOOP OF A SERIES-SUPPLIED REPEATER

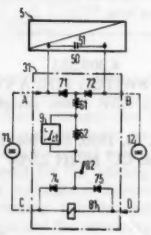
Heinz Kraicar, Poecking, and Alfred Ziegler, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 23, 1979, Ser. No. 96,791

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1978, 2852810

Int. Cl.[3] H04B 3/44

U.S. Cl. 179—170 J 5 Claims



1. A circuit for closing the current feed loop for a series-supplied repeater station in response to an interruption in the transmission line, comprising in combination a relay connected in series with said transmission line, a shunt circuit including a shunt resistor and a contact of said relay in series therewith, said relay connecting said shunt circuit into circuit with said feed loop in response to said interruption, and timer circuit means for changing the resistance of said shunt circuit from a first value to a second value of lower resistance than said first value a predetermined time after occurrence of said interruption, whereby said first value gives a voltage across said shunt circuit which is higher than the required supply voltage of a repeater station.

4,309,578

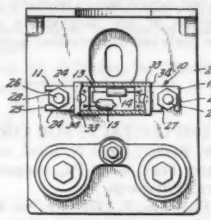
TELEPHONE RINGER LOAD SIMULATOR

Om P. Ahuja, East Meadow, N.Y., assignor to Porta Systems Corp., Syosset, N.Y.

Filed Jun. 9, 1980, Ser. No. 157,507

Int. Cl.[3] H04B 3/46; H04M 3/00

U.S. Cl. 179—175.2 B 3 Claims



1. As a new article of manufacture, a telephone ringer load simulator for use in conducting tests of the condition of an individual subscriber circuit instituted from a telephone office comprising: a pair of terminal members of generally elongated configuration and having a means on each of two opposite ends thereof for the engagement upon a corresponding pair of connections on an existing building entrance terminal; a single conductor interconnecting said means to provide a short of the circuit at said building entrance terminal; a resistor and an avalanche discharge device in series with said single conductor, said resistor having an effective resistance value equivalent to a fractional multiple of the resistance provided by an actual ringer, said discharge device being conductive at a voltage slightly below normal ringing voltage, and having a cutoff voltage at a value substantially above normal tip voltage; whereby said telephone ringer load simulator imposes substantially no load upon the subscriber circuit during normal operating conditions, and provides a sufficient ringing load to permit current measurement.

4,309,579

GANGED PUSH-BUTTON SWITCH

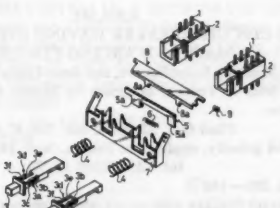
Shiro Kondo, and Yasuo Takii, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Apr. 14, 1980, Ser. No. 139,712

Claims priority, application Japan, Apr. 20, 1979, 54-53235[U]

Int. Cl.[3] H01H 9/26

U.S. Cl. 200—5 E 5 Claims



1. In an assembly of push-button switches ganged together and each having an operation rod movable inwardly of the respective switch into a latchable position and having a cam part formed in a surface thereof, said assembly having means including an interlocking plate common to said switches and adapted to engage the respective cam parts thereof for holding an operation rod moved into its latchable position while releas-

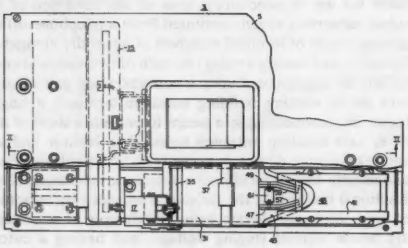
ing any previously held operation rod, the improvement wherein said operation rods each include a cam portion formed in a surface thereof lying substantially at a right angle to the surface of said cam part, and said holding means including a second interlocking plate common to said switches and adapted to engage the respective cam portions thereof for also holding an operation rod moved into its latchable position while releasing any previously held operation rod, whereby any operation rod moved into its latchable position will be held by the interaction of two interlocking plates operating on respective cam parts and cam portions facing in different directions.

4,309,580

DUAL ARCING CONTACTS FOR CIRCUIT BREAKER

John A. Wafer, Beaver; Louis N. Ricci, and Alfred E. Maier, both of Beaver Falls, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 7, 1979, Ser. No. 46,735
Int. Cl.³ H01H *33/00*
U.S. Cl. 200—144 R 4 Claims



1. A circuit interrupter comprising a stationary contact and a movable contact which are operable along a predetermined path between open and closed positions to establish an arc, circuit breaker means including a movable contact carrying arm for moving the movable contact, an arc chute for extinguishing the arc including a plurality of spaced apart plates, said plates being disposed substantially transversely of the established arc and extending across the arc chute, said arm including at least two spaced-apart conductors extending toward the plates, the conductors having facing end portions turned toward each other, and the conductors being disposed to provide parallel current paths which conduct an arc away from the contacts and into the arc chute.

4,309,581

GAS CIRCUIT BREAKER HAVING INDEPENDENT MAIN AND ARCING CIRCUITS

Marcel Macaire, Saint-Egreve, and Jean-Louis Mircovich, Seyssins, both of France, assignors to Merlin Gerin, Grenoble, France

Filed Oct. 22, 1979, Ser. No. 87,394
Claims priority, application France, Nov. 14, 1978, 78 32214
Int. Cl.³ H01H *33/70*
U.S. Cl. 200—148 R 8 Claims

1. Circuit-breaker with an arc-extinguishing device mounted in a tubular housing filled with an insulating gas of high dielectric strength such as sulfur hexafluoride and including:

a main circuit having stationary and movable main contacts,

an independent arcing circuit comprising stationary and movable arcing contacts forming an auxiliary circuit bypassing said main circuit, said movable arcing contact being axially movable in said housing and independent from said main movable contact,

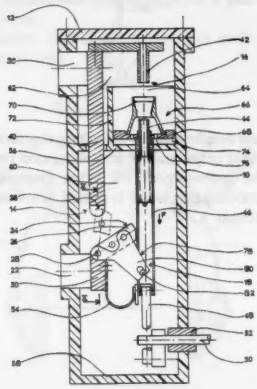
an operating mechanism coupled to said movable contacts so as to open said main contacts before the separation of said arcing contacts,

said main and arcing contacts being surrounded by said insulating gas,

a pair of input and output terminals extending through the wall of said housing and being longitudinally spaced in said housing,

said main and arcing circuits being electrically connected in parallel to said input and output terminals and forming two independent current paths inside said housing,

said main circuit extending rectilinear along the axial direction of said housing between said input and output terminals inside said housing, and said arcing circuit being laterally spaced from said main circuit, so that the electrical paths comprising loops formed by the main and arcing circuits have substantially the same reactance, said arcing circuit being formed such that a majority of the current of said breaker flows through the main circuit in the closed position of the circuit breaker until the separation of the main contacts,



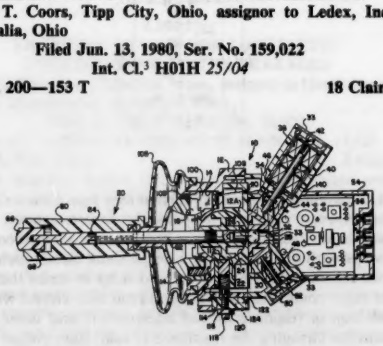
said arcing circuit including a connecting member which can move relative to said arcing circuits arranged between the movable arcing contact and one of a pair of current-supplying terminals so that the magnitude of current in said member as compared to the magnitude of current in said main circuit is low.

4,309,582

PUSH BUTTON SWITCH FOR A CONTROLLER

George T. Coors, Tipp City, Ohio, assignor to Ledex, Inc., Vandalia, Ohio

Filed Jun. 13, 1980, Ser. No. 159,022
Int. Cl.³ H01H *25/04*
U.S. Cl. 200—153 T 18 Claims



1. An improved controller of the type having a body, a shaft, and means for pivotally mounting the shaft in the body, wherein the improvement comprises:

a handle on an end of the shaft, the shaft and handle having a longitudinal opening therein;
rod means slidably positioned within the opening;
a collar connected to the rod means;
switch operator means having an outer convex bearing surface slidably engaging the collar and defining a cental passage through which passes the shaft; and
switching means positioned between the switch operator means and the body such that, as the rod means is displaced toward the body, the rod means urges the collar to displace the switch operator means toward the body thereby operating the switching means.

4,309,583

HEAT-TREATING APPARATUS FOR PROLONGING THE LIFE OF A PRESSURE VESSEL, ESPECIALLY A REACTOR PRESSURE VESSEL

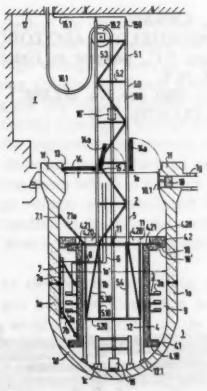
Peter Krauss, Erlangen; Ewald Müller, Neunkirchen; Horst Pörner, Erlangen, and Robert Weber, Uttenreuth, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim an der Ruhr, Fed. Rep. of Germany

Filed May 8, 1979, Ser. No. 37,121

Claims priority, application Fed. Rep. of Germany, May 10, 1978, 2820442

Int. Cl.³ H05B *6/10, 6/38;* G21C *13/00*

U.S. Cl. 219—7.5 **16 Claims**



1. Heat-treating apparatus for prolonging the life of a pressure vessel formed of thermally resistant material subject to time-dependent structural changes due to neutron flux comprising a heating device positionable within a pressure vessel adjacent to a wall portion thereof which is to be heat-treated; and a mounting support for the heating device comprising a hollow substantially cylindrical mounting member; means supporting said mounting member and for inserting said mounting member into and for removing said mounting member from the pressure vessel through an opening in the pressure vessel; means for flooding the interior of the pressure vessel with protective liquid preparatory to inserting and removing said mounting member and said heating device from the pressure vessel; and means for draining said protective liquid from the interior of the pressure vessel prior to actuation of the heating device for heating the adjacent wall portion, said mounting member being an insulating cylinder having outer circumferential contact surfaces and being positionable so that said contact surfaces form sealing contact with the inner peripheral surface of the pressure vessel in a manner that said insulating cylinder defines an annular heating space located adjacent the pressure-vessel wall portion to be treated, said mounting member being formed of adjustable segments, said contact surfaces being located, at least at the upper end of said mounting member, so that said mounting member is insertable into the interior of the pressure vessel with an outer diameter smaller than the inner diameter of the pressure-vessel opening, and is then adjustable to an outer diameter corresponding to the inner diameter of the wall portion of the pressure vessel to be treated.

4,309,584

MATRIX KEYBOARD FOR SELECTION OF FOODSTUFF AND ITS ASSOCIATED COOKING PROGRAM

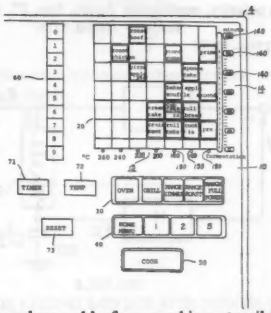
Yukio Terakami, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 25, 1979, Ser. No. 78,895

Claims priority, application Japan, Sep. 25, 1978, 53/118152

Int. Cl.³ H05B *6/66*

U.S. Cl. 219—10.55 B **17 Claims**



1. A control panel assembly for a cooking utensil having a keyboard operable to generate cooking program sequences for controlling energization of a heat source, the improvement comprising:
a plurality of the switches disposed within the keyboard and allocated in a matrix form where an abscissa represents temperature values and an ordinate represents time periods both of which provide information for the cooking program sequences,
each of the plurality of key switches being provided for selecting the desired type of a specific resultant foodstuff and for reading out the associated cooking program sequences according to which the heat source is energized to cook the specific resultant foodstuff.

4,309,585

ERROR ALARM SYSTEM IN A MICROWAVE OVEN

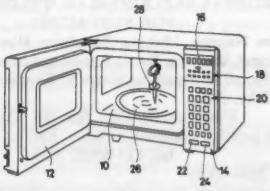
Keiichiro Doi, Izumi, and Toshihiro Kashiwagi, Osaka, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 18, 1979, Ser. No. 104,783

Claims priority, application Japan, Dec. 19, 1978, 53/165462; Dec. 19, 1978, 53/165463

Int. Cl.³ H05B *6/66*

U.S. Cl. 219—10.55 B **6 Claims**



1. In a microwave oven comprising an oven body, an oven door secured to the oven body, a multi-digit digital display

unit, and a cook start switch for instructing initiation of microwave generation, the improvement comprising:

a first detection switch means for detecting whether said oven door is closed or open;

a first determination means associated with said first detection switch means and said cook start switch for developing a first control signal when said cook start switch is actuated under the condition where said oven door is open; and

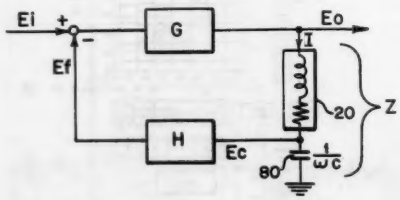
a first display driver for providing an alarm display on said multi-digit digital display unit in response to said first control signal.

4,309,586

HIGH FREQUENCY INDUCTION HEATING CIRCUIT

Kazuhisa Ishibashi, Yokohama, Japan, assignor to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Sep. 19, 1979, Ser. No. 76,858
Claims priority, application Japan, Sep. 27, 1978, 53-119655
Int. Cl.[3] H05B 6/06
U.S. Cl. 219—10.77 2 Claims



1. In a high frequency induction heating circuit for heating a plurality of non-magnetic articles where said induction heating circuit includes a semiconductor oscillator circuit (48) having a series resonance circuit including a heating coil (20) along which said non-magnetic articles are adapted to be conveyed and a condenser (80), the improvement in that said induction heating circuit comprises:

detection circuit means (50) for detecting the teminal voltage of said condenser, said terminal voltage being increase responsive to the decrease of the number of said non-magnetic articles which are conveyed along said heating coil (20),

current control circuit means (44) for controlling a supply current to said oscillator circuit (48) where the current control circuit means is responsive to a signal from said detecting circuit to increase the supply current to said oscillator circuit with an increase of said terminal voltage, and

a control gain regulation means (90) for adjusting a control gain which is included in said current control circuit means (44) to adjust the ratio of the increase of said supply current to the increase of said terminal voltage so that the heating temperature of said non-magnetic article is kept substantially constant irrespective of the number of said non-magnetic articles which are conveyed along said heating coil.

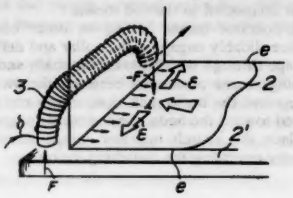
4,309,587

HORIZONTAL ELECTRO-SLAG WELDING PROCESS FOR SURFACING

Shosaburo Nakano, Mobara; Toshiharu Hiro, Chiba; Noboru Nishiyama, Ichihara; Kazuo Agusa, and Masaaki Kosho, both of Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Feb. 20, 1980, Ser. No. 122,875
Claims priority, application Japan, Apr. 13, 1979, 54-44178
Int. Cl.[3] B23K 9/04
U.S. Cl. 219—73.11 3 Claims

1. In a method for surfacing with horizontal electroslag welding by using a strip electrode, the improvement comprising arranging at least one solenoid, magnetized by direct current, adjacent to the strip electrode, and applying magnetic fields, having components perpendicular to a base metal, to both sides of molten pool of metal so that the magnetic fields



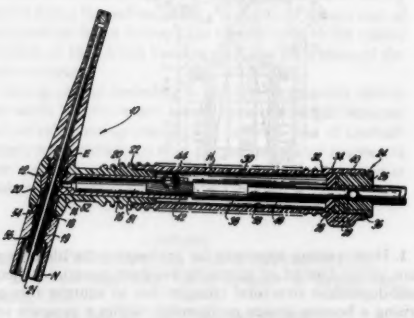
act in mutually opposite directions at both sides of the molten pool, whereby molten metal flows toward both edges of the pool in the width direction of the electrode.

4,309,588

AIR COOLED GAS SHIELDED ARC TORCH

Clifford W. Hill, Florence, S.C., assignor to Union Carbide Corporation, New York, N.Y.

Filed Aug. 27, 1980, Ser. No. 181,898
Int. Cl.[3] B23K 9/16
U.S. Cl. 219—75 8 Claims



1. In a gas shielded arc torch comprising a torch head having a body in the form of a barrel for supporting a collet body in which a collet is mounted for receiving an electrode, a tubular shank of electrically conductive material extending from said body for supplying current to said electrode through said collet body and collet respectively and forming a passageway for passing a shielding gas through said torch head for shielding said electrode; a hollow handle coupled in a fluid sealed engagement about said shank at the forward end of said handle and extending from said tubular shank in a substantially coaxial relationship therewith; a seal assembly mounted in fluid sealed engagement at the rear end of said handle for forming a fluid sealed cavity within said handle relative to the atmosphere; power supply cable means extending through said seal assembly in electrical engagement with said tubular shank and gas conduit means extending through said seal assembly for exhausting shielding gas into said fluid sealed cavity, whereby said shielding gas substantially cools said handle and torch body before passing over said electrode.

4,309,589

METHOD AND APPARATUS FOR ELECTRON BEAM WELDING

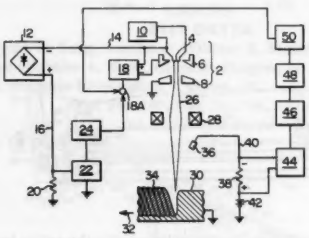
Tatsuya Hashimoto, Tokyo; Michio Inagaki, Machida; Hirosada Irie, Yokohama, and Susumu Tukamoto, Kawasaki, all of Japan, assignors to National Research Institute for Metals, Tokyo, Japan

Filed Mar. 21, 1979, Ser. No. 22,498

Claims priority, application Japan, Jul. 25, 1978, 53/89982; Jul. 25, 1978, 53/89983; Jan. 29, 1979, 54/8196; Jan. 29, 1979, 54/8197

Int. Cl.³ B23K *15/00*

U.S. Cl. 219—121 ED **37 Claims**



1. In a method for electron beam welding which comprises producing electrons, accelerating the electrons by the application of a high voltage to form an electron beam, converging and focusing the electron beam with a converging lens, and irradiating the converged electron beam onto materials to be welded, thereby forming a molten area on the materials to be welded, the improvement wherein the output of a welding device is detected, from which an oscillation of the focus of said electron beam which is due to a low frequency pulsation in said high voltage is detected, and the electron beam is controlled according to the detected oscillation of said focus for a period of time not more than one half the period of the pulsation.

19. In an electron beam welding apparatus comprising an electron gun having a filament, a heating power source for supplying an electric current to the filament to heat it and release electrons from the filament and a high voltage power source for accelerating the electrons by the application of a high voltage to form an electron beam; and a converging lens for converging and focusing the electron beam from the electron gun and irradiating the electron beam onto materials to be welded; the improvement wherein said apparatus further comprises a detecting means for detecting the output of a welding device from which an oscillation of the focus of the electron beam which is due to a low frequency pulsation in said high voltage, and a control means for controlling the electron beam according to the detected oscillation of said focus for a period of time not more than one half the period of the pulsation.

4,309,590

NARROW GROOVE WELDING TORCH

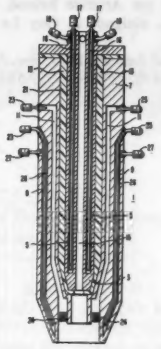
Israel Stol, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 29, 1980, Ser. No. 126,093

Int. Cl.³ B23K *9/32, 9/225*

U.S. Cl. 219—137.62 **5 Claims**

1. A narrow groove welding torch comprising an elongated electrode guide having cooling ducts generally extending the length thereof and having a generally rectangular cross section; an elongated housing having a generally rectangular cross section and having cooling ducts and gas ducts disposed therein and generally extending the length thereof; and elongated insulating strips having a generally rectangular cross section disposed between the electrode guide and the housing



and providing electrical insulation therebetween to form a strong and durable torch.

4,309,591

HEATING AND FIXING DEVICE FOR TONER IMAGE

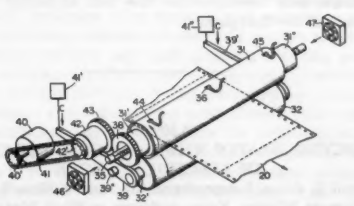
Masanobu Kanoto, Tokyo, and Shigeru Ueda, Kamifukuoka, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 18, 1979, Ser. No. 58,433

Claims priority, application Japan, Jul. 25, 1978, 53-90583; Jul. 25, 1978, 53-90584

Int. Cl.³ H05B *1/00*

U.S. Cl. 219—216 **24 Claims**



1. A device for heating and fixing a toner image on a support member, comprising:

first and second rollers, at least one of which is thermally expansible, for pressure-holding the toner image support member therebetween and conveying the same;

means for supporting said first and second rollers;

means for transmitting a drive force from a drive source to at least one of said first and second rollers;

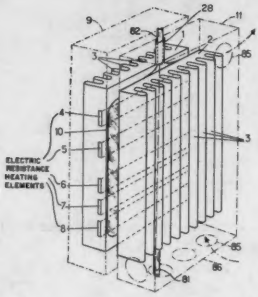
heating means for heating at least one of said first and second rollers to a temperature at which the toner image is fixed on said support member; and

means for adjusting the temperature difference between the opposite ends of at least one of said first and second rollers to render the thermal expansion amount difference between the opposite ends of said first and second rollers to substantially zero in order to prevent said toner image support member from being displaced transversely from a predetermined conveyance path.

4,309,592
ELECTRIC HEATING DEVICE FOR HEATING STERILIZED FLUIDS, SUCH AS BLOOD

Guy Le Boeuf, 9 rue Aristide Briand, Cormeilles en Parisis, France (95240), assignor to Guy Le Boeuf, Cormeilles en Parisis, France

Filed Jan. 25, 1979, Ser. No. 6,696
Int. Cl.[3] H05B *1/02*; F24H *1/12*; A61M *5/14*; B67D *5/62*
U.S. Cl. 219—299 10 Claims



1. A device for heating blood for transfusion, comprising two vertically disposed opposed electric heating plates engaging the opposite faces of a flat bag for supplying heat thereto and temperature regulating means for controlling an electric current supplied to the heating plates according to the temperature of the bag, said flat bag being made of a flexible plastic material and delimitating a fluid path through said bag which has a width progressively increasing from a lower inlet pipe for connection to a blood supply means to a single rectilinear elongated main portion of uniform width and progressively decreasing from said elongated main portion towards an upper outlet pipe for connection to injection means, said bag comprising flow restricting means at an intermediate level between the inlet pipe and the main portion of the fluid path, restricting the travel of fluid introduced by said inlet pipe and producing a substantially homogeneous flow rate all across the main portion of the fluid path.

4,309,593
ELECTRIC HEATER WHICH REDUCES THE CHANCE OF ELECTRICAL SHOCK

Darrell B. Jones, Independence, Mo., and William B. Kircher, Shawnee Mission, Kans., assignors to Rival Manufacturing Company, Kansas City, Mo.

Filed Jan. 15, 1980, Ser. No. 112,233
Int. Cl.[3] H05B *3/32*
U.S. Cl. 219—347 19 Claims

1. In an electric heater having an outer casing with an open front, the improvement comprising:

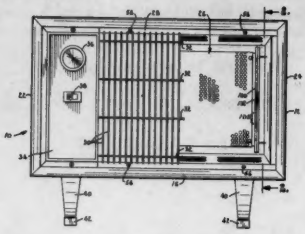
a protective grille attached to the outer casing and covering a substantial portion of said open front;

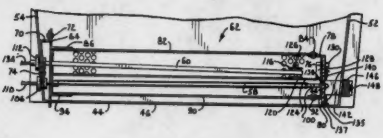
a reflector mounted within the casing;

a heating element enclosure having a perforated face;

means for mounting said heating element enclosure within an operative proximity of said reflector and for electrically insulating said enclosure from said reflector and for preventing said heating element from contacting said reflector in the event said heating element becomes broken, disengaged or abnormally deflects, the apertured face of said heating element enclosure outwardly facing the open front of said outer housing; and

a ribbon-type heating element mounted within said heating element enclosure and electrically insulated from said



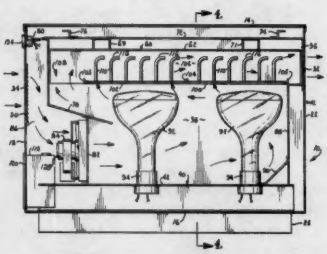


casing said enclosure having substantially the entire heating element mounted therein.

4,309,594
MODULAR INFRARED SPACE HEATER DEVICE

John P. Jones, 3270 N. Barnes, Springfield, Mo. 65802

Filed Sep. 24, 1979, Ser. No. 78,077
Int. Cl.[3] H05B *1/00*; F24H *3/02*
U.S. Cl. 219—365 5 Claims



1. An electrical heating device comprising:

an outer casing presenting therein a heating chamber having at least one side wall, said casing having top, bottom and side walls and an inlet opening communicating with said chamber and an outlet opening;

a plate member constructed of a heat conductive material, said plate member being supported within said casing at a location to form one boundary of the heating chamber and at a location spaced from a portion of the casing to present a discharge channel having an inlet at one end communicating with the interior of said heating chamber and an opposite end communicating with said outlet opening to direct air through the discharge channel in a direction generally parallel to the plate member, said plate member forming a partition between said heating chamber and discharge channel;

electric heating means in said heating chamber for effecting heating of said heating chamber and said plate member;

a plurality of open-ended conduits each mounted to said plate member and projecting into said discharge channel therefrom generally transversely of the direction of air flow

through the channel, each conduit having an open inlet end communicating with said heating chamber and an open outlet end disposed in said discharge channel and extending generally parallel to the direction of air flow therein to induce air flow through said conduits in response to air flow in said discharge channel; and

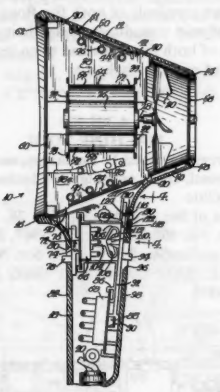
fan means for circulating air from said inlet opening and through said heating chamber and discharge channel to said outlet opening, whereby the heat in said heating chamber is conducted through said plate member and the flow in said discharge channel induces flow of heated air through said conduits from said heating chamber to said discharge channel.

4,309,595

HAIR DRYER

Douglas G. Long, Lombard; William R. Hemrich, Glen Ellyn, and Nicholas A. Shaw, Glendale Heights, all of Ill., assignors to Sunbeam Corporation, Chicago, Ill.

Filed Jul. 14, 1980, Ser. No. 167,868
Int. Cl.³ A45D *20/12*
U.S. Cl. 219—370 **13 Claims**



1. A hand held hair dryer comprising a generally tubular-shaped housing having a small open end for concentrated air flow therefrom and a substantially larger opposite open end for diffused air flow therefrom, a handle projecting from said housing, heater means disposed in said housing, and a reversible motor mounted in said housing and having a fan driven thereby and means selectively providing either a concentrated or a diffused flow of heated air through said small or large open ends of said housing, respectively, such that air emanating from either of said openings flows in substantially parallel directions.

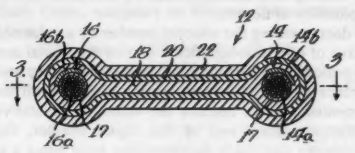
4,309,596

FLEXIBLE SELF-LIMITING HEATING CABLE

George C. Crowley, Chicago, Ill., assignor to Sunbeam Corporation, Chicago, Ill.

Filed Jun. 24, 1980, Ser. No. 162,457
Int. Cl.³ H05B *3/54*
U.S. Cl. 219—549 **6 Claims**

1. In an electric blanket, a heating cable comprising a pair of elongated spaced conductors supported in spaced relation by a positive temperature coefficient material which serves as resistance heating means for said cable, each of said conductors includes a core of nonconducting flexible threads and a helically disposed ribbon of low resistance material wound on said core, said core of threads being impregnated with conducting carbon which provides a low resistance path lengthwise of said conductors on the inside diameter of said helically wound ribbon of material, said PTC material being extruded over said



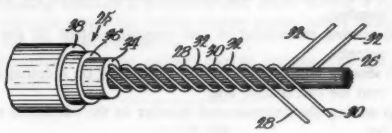
spaced conductors, and at least one insulating coating being extruded over said PTC material.

4,309,597

BLANKET WIRE UTILIZING POSITIVE TEMPERATURE COEFFICIENT RESISTANCE HEATER

George C. Crowley, Chicago, Ill., assignor to Sunbeam Corporation, Chicago, Ill.

Division of Ser. No. 150,873, May 19, 1980, Pat. No. 4,271,350.
This application Dec. 29, 1980, Ser. No. 220,938
Int. Cl.³ H05B *3/54*
U.S. Cl. 219—549 **4 Claims**



1. A self-limiting electric heating element adapted for use in flexible heated products such as heating pads, electric blankets and the like comprising an elongated conductor including a flexible insulating core supporting a pair of conductor wires disposed helically around said core, an envelope of positive temperature coefficient material positioned in direct engagement with said spaced conductors providing a conducting path between said conductor wires through said material, a first coating of insulating material enclosing said positive temperature coefficient material, said coating having a melting point above the melting point of said positive temperature coefficient material to maintain the shape during the annealing operation at a temperature above the melting point of said positive temperature coefficient material and below the melting point of said coating, an insulating spacer positioned between said conductors to prevent electrical contact and maintain substantial spacing between said wires during annealing of said positive temperature coefficient material, and a second coating of insulating material surrounding said first coating.

4,309,598

VARIABLE RATE DATA ENTRY APPARATUS AND METHOD

James M. Davis, Jr., Indialantic, Fla., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 27, 1979, Ser. No. 79,632
Int. Cl.³ H03K *21/36*; G06M *3/14*
U.S. Cl. 235—92 MP **18 Claims**

1. In apparatus of the type having an operating parameter displayed as a digital number and a manual control for entering data altering the displayed number, the manual control having a plurality of detents regularly spaced apart, a process for selectively varying the rate of the data entry depending on the speed of movement of the manual control, the process comprising the steps of:

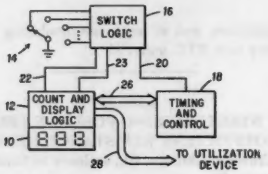
(a) selecting a number greater than one least-significant unit

of the displayed number and representative of the physical and dynamic characteristics of the manual control;

(b) sensing said manual control positioned on one of said plurality of detents;

(c) decrementing the selected number by a value representative of one least-significant unit of the digital number;

(d) periodically repeating the decrementing step until occurrence of the movement sensing step or until the decremented number reaches the value representative of one least-significant unit of the digital number, the period between successive decrementing steps being a submultiple of a predetermined maximum period for moving the manual control one detent, during which maximum period the number being decremented is greater than the value representative of one least-significant unit of the digital number;



(e) sensing movement of said manual control off the one detent;

(f) sensing said manual control positioned on a detent ajdacent the one detent; and

(g) adding the decremented number to the displayed number.

4,309,599

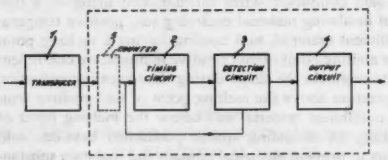
PACER DEVICE

Harold K. Myers, 5637 McLynn Ave., Montreal, Quebec, Canada (H3X 2P9)

Filed Dec. 6, 1979, Ser. No. 100,868

Int. Cl.[3] G07C *1/22*

U.S. Cl. 235—92 TF **5 Claims**



1. An electronic device for measuring the time interval between the occurrence of any two successive ones of a plurality of similar events, specificially, the time interval between footsteps in jogging, running, or walking, or the leg or arm motion associated with bicycling, rowing, swimming, cross-country skiing or the like, and for providing bio-feedback information in the form of an alarm signal: if the measured interval is less than a predetermined low limit; or if the measured interval is greater than a predetermined high limit;

said device comprising:

transducer means for detecting the occurrence of each one of said events and for providing an output signal at each such detection;

a timing circuit for measuring the time interval between the occurrence of two successive such events, the output signal of said transducer being fed to said timing circuit;

a detection circuit for detecting whether the measured interval is less than said low limit or greater than said high limit;

an output circuit to provide an output signal when interval is less than said low limit or greater than said high limit;

said timing circuit comprising a two state device having a first period and a second period;

said first period being equal to said low limit;

the sum of said first period and said second period being equal to said high limit;

said two state device comprising a multivibrator, said first period being determined by a first timing circuit associated with a first half of the multivibrator, and said second period being determined by a second timing circuit associated with a second half of said multivibrator;

said first and second timing circuits comprising RC circuits, the R's of both circuits being adjustable;

whereby said first and second periods are adjustable; and

said detection circuit comprising a first D type flip-flop and a second D type flip-flop;

each said flip-flop having a D terminal, a clock terminal and a reset terminal;

an output of said first half of said multivibrator being fed to the D terminal of said first flip-flop;

the inverse of said output of said first half of said multivibrator being fed to the D terminal of said second flip-flop;

an output of said second half of said multivibrator being fed to the reset terminals of both flip-flops; and

an output of said transducer means being fed to the clock terminals of both flip-flops and to an input terminal of the first half of said multivibrator.

4,309,600

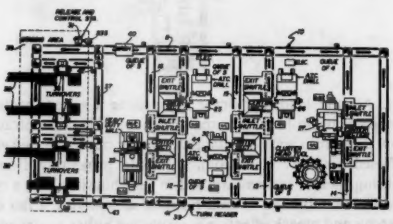
MACHINE TOOL

Charles B. Perry; Raymond L. Bomkamp, and Kendall F. Bone, all of Cincinnati, Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Continuation of Ser. No. 83,931, Nov. 26, 1970, which is a division of Ser. No. 690,940, Dec. 15, 1967, Pat. No. 3,543,392. This application Jul. 5, 1979, Ser. No. 54,687

Int. Cl.[3] G06F *15/20*; G06K *15/00*; G06G *7/64*; B23Q *7/00*

U.S. Cl. 235—375 **5 Claims**



1. A manufacturing system for diverse workpieces, comprising:

(a) a plurality of machine tools,

(b) identifying means associated with each workpiece,

(c) a conveyor associated with the machine tools for conveying workpieces and having a primary section, a branch section connecting the primary section to each machine tool, and diverting means associated with each branch section and responsive to a control signal for selectively diverting a workpiece from the primary section to any of said branch sections, each of said branch sections having an inlet portion leading from said primary section to the machine tool and an outlet portion leading from the machine tool to said primary section, said inlet portion being of sufficient length to enable a queue of workpieces to accumulate;

(d) detector means associated with the conveyor for sensing and identifying each workpiece on the conveyor and the accumulation of workpieces in a queue in each branch section, said detector means producing sensing signals

indicative of each workpiece along the conveyor and the queue length of workpieces in each branch section, and

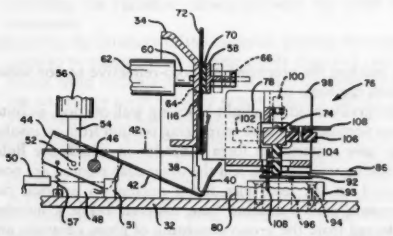
(e) control means including a computer and a program memory associated with the computer for storing a primary program of operations to be performed by the machine tools on the workpieces and at least one contingency program, said control means being responsive to said sensing signals for generating control signals to said diverting means for direction workpieces along the conveyor in accordance with said primary program and for shifting to a contingency program for those workpieces that would otherwise enter a branch section in which the queue length of workpieces exceeds a predetermined number of workpieces.

4,309,601

MOVING HEAD READER MECHANISM

Robert B. Nally, and David J. Jackola, both of Waterloo, Canada, assignors to NCR Canada Ltd. - NCR Canada Ltee, Mississauga, Canada

Filed Aug. 25, 1980, Ser. No. 181,022
Int. Cl.³ G06K *13/06;* G11B *3/40*
U.S. Cl. 235—449 17 Claims



1. An apparatus for processing documents comprising:

(a) scanning means;

(b) a guide member;

(c) means for supporting said scanning means for transverse movement relative to one side of said guide member;

(d) drive means for reciprocating said scanning means of said supporting means when operated;

(e) a document support member movably mounted adjacent said guide member, said support member having a supporting surface extending to a position in the path of movement of said scanning means;

(f) means for orientating a document positioned on the supporting surface against said guide member when operative;

(g) means for sensing the initial movement of the document support member upon the positioning and the movement of a document against the supporting surface;

(h) means for moving said document support member to a position out of the path of movement of said scanning means when operated;

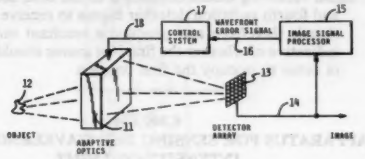
(i) and control means coupled to said sensing means for operating in sequential order said orienting means, said moving means and said drive means in response to the sensing of the initial rotation of the document support member by said sensing member whereby said scanning means scans a document positioned by said clamping means against said guide member.

4,309,602

WAVEFRONT SENSING BY PHASE RETRIEVAL

Robert A. Gonsalves, Woburn, Mass., and Anthony J. Devaney, Ridgefield, Conn., assignors to Eikonix Corportation, Bedford, Mass.

Filed Nov. 1, 1979, Ser. No. 90,420
Int. Cl.³ G01J *1/20*
U.S. Cl. 250—201 2 Claims



1. Phase retrieval wavefront sensing apparatus comprising,

detecting means in an image plane for providing a signal set representative of the radiant energy incident upon a matrix of locations in said image plane,

and means for processing the signal set provided by said detecting means to provide an estimated error signal representative of the estimated wavefront phase distortion of the radiant energy incident upon the detecting means after passing through a predetermined plane having a region through which the radiant energy passes before illuminating the detecting means,

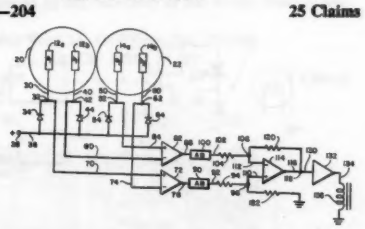
substantially all the radiant energy passing through said region illuminating said detecting means.

4,309,603

AUTO FOCUS SYSTEM

Norman L. Stauffer, Englewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 17, 1979, Ser. No. 85,821
Int. Cl.³ G01J *1/36*
U.S. Cl. 250—204 25 Claims



1. Range determination apparatus for use with an optical system including first lens means movable along a first axis to a first position in which an image of a remote object is in proper focus at a predetermined plane comprising:

second lens means coupled to the first lens means so as to move therewith along a second axis parallel to and displaced from the first axis and operable to transmit radiation from the object;

third lens means mounted to receive the radiation transmitted by the second lens means so as to form first and second images of the exit pupil of the second lens means;

first and second radiation detector means mounted to receive the first image of the exit pupil of the second lens means, the first and second radiation detector means each being operable to produce an output signal indicative of the radiation received thereby, the output signals of the first and second radiation detector means being substantially equal when the first lens means is proximate the first position and normally being unequal when the first lens means is on either side of the first position;

third and fourth radiation detector means mounted to re-

ceive the second image of the exit pupil of the second lens means, the third and fourth radiation detector means each being operable to produce an output signal indicative of the radiation received thereby, the output signals of the third and fourth radiation detector means being substantially equal when the first lens means is proximate the first position and normally being unequal when the first lens means is on either side of the first position; and

signal receiving means connected to the first, second, third and fourth radiation detector means to receive the output signals therefrom and produce a resultant output signal indicative of whether the first lens means should be moved in order to occupy the first position.

4,309,604

APPARATUS FOR SENSING THE WAVELENGTH AND INTENSITY OF LIGHT

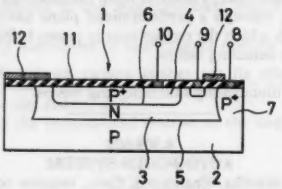
Toshihumi Yoshikawa, Nara; Zempei Tani, Tondabayashi; Akira Aso, Nara, and Hitoshi Kawanabe, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

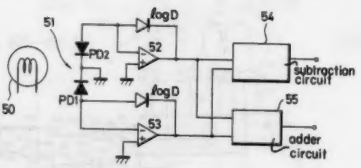
Filed Jul. 24, 1979, Ser. No. 60,189

Claims priority, application Japan, Jul. 24, 1978, 53-90665; Aug. 15, 1978, 53-99685; Sep. 20, 1978, 53-116211; Sep. 28, 1978, 53-120212; Sep. 28, 1978, 53-120213

Int. Cl.³ G01J *1/42, 3/46;* H01L *27/14*

U.S. Cl. 250—226 **1 Claim**





1. An optoelectric detection system comprising: a photoelectric semiconductor device including;

a semiconductor substrate;

at least two PN junctions formed in said semiconductor substrate at different depths from the surface of said semiconductor substrate;

first output electrode means for developing first output signals derived from the deeper of said at least two PN junctions; and

second output electrode means for developing second output signals derived from the shallower of said at least two PN junctions;

a first logarithmic compression circuit for logarithmically compressing said first output signals;

a second logarithmic compression circuit for logarithmically compressing said second output signals;

a subtractor connected to receive output signals derived from said first logarithmic compression circuit and said second logarithmic compression circuit, respectively, and

an adder connected to receive outputs from said first and second logarithmic compression circuits;

said subtractor developing a third output signal related to the wavelength of light impinging on said photoelectric semiconductor device;

said adder developing a fourth output signal related to the intensity of light impinging on said photoelectric semiconductor device;

said first PN junction being sensitive to light of a first particular wavelength band;

said second PN junction being sensitive to light of a second predetermined wavelength band including wavelengths greater than those in said first particular wavelength band;

said first PN junction and said second PN junction have substantially equivalent sensitivities to light intensity.

4,309,605

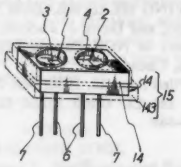
PHOTO-REFLECTIVE SENSOR

Tadatoshi Okabe, Hanno, Japan, assignor to New Japan Radio Co., Ltd., Tokyo, Japan

Filed Oct. 2, 1979, Ser. No. 81,121

Int. Cl.³ H01J *5/02*

U.S. Cl. 250—239 **5 Claims**



1. A method for preparing a photo-reflective sensor which comprises the steps of

(a) integrally molding a light-blocking wall portion, an outer case portion and a lead wire fixing portion from an insulating base material to form a header in which the light-blocking wall portion and the outer case portion are positioned on the lead wire fixing portion to provide two recesses, said insulating base material being a member selected from the group consisting of glass, ceramics and glazed ceramics and having a color capable of blocking the light of a particular wavelength,

(b) fixing a plurality of lead wires to the header to form a stem,

(c) die-bonding a light-emitting chip to one of two lead wires in one recess and a light-detecting chip to one of two lead wires in the other recess,

(d) wire-bonding each of the die-bonded light-emitting chip and light-detecting chip to the other lead wire in each recess to form a light-emitting element and a light-detecting element, and

(e) filling the recesses with a transparent resin.

4,309,606

MEASURING PLATE THICKNESS

Simon J. Björkman, Norrköping; Georg S. Jonsson, and Per S. R. Rundquist, both of Nyköping, all of Sweden, assignors to Aktiebolaget Atomenergi, Stockholm, Sweden

Filed Nov. 29, 1977, Ser. No. 855,800

Claims priority, application Sweden, Dec. 6, 1976, 7613688

Int. Cl.³ G01D *18/00;* G01N *23/00*

U.S. Cl. 250—252 **17 Claims**

1. A method of measuring plate thickness by determining the absorption of electromagnetic radiation by the plate, comprising the steps of:

providing a source of electromagnetic radiation having an energy spectrum with at least one characteristic energy;

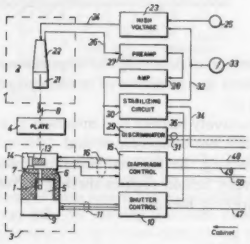
calculating a plurality of corrected mass absorption coefficients respectively corresponding to partial thickness ranges

within the total thickness range to be covered in the measurement process by measuring the intensity of electromagnetic radiation passing through each of a plurality of calibrating plates having different thicknesses lying respectively within said partial thickness ranges;

determining a first normalizing value in association with said calculating step by measuring the intensity of electromagnetic radiation passing through a plate having a predetermined thickness lying within said total thickness range;

determining a second normalizing value prior to a step of measuring plate thickness by measuring the intensity of electromagnetic radiation passing through said plate having said predetermined thickness;

placing a plate whose thickness is to be measured in the path of the electromagnetic radiation from said source and



detecting the radiation passing through the plate to be measured;

measuring the intensity of the radiation passing through the plate to be measured by counting only detected radiation pulses lying within a photopeak formed by radiation having an energy level within a predetermined energy interval around said characteristic energy;

normalizing the measured intensity of radiation passing through the measured plate by multiplying the measured intensity by a factor equal to the quotient of said first normalizing value and said second normalizing value; and

calculating the thickness of the measured plate from the normalized intensity measurement and the corrected mass absorption coefficient corresponding to the partial thickness range within which the measured plate lies.

4,309,607

ELECTRON-IMPACT SPECTROMETER

Harald Ibach, Aachen-Verlautenheide, Fed. Rep. of Germany, assignor to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Filed Nov. 23, 1979, Ser. No. 96,618

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1978, 2851743

Int. Cl.³ H01J *40/00*

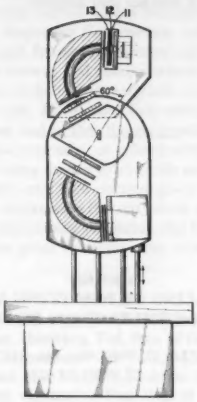
U.S. Cl. 250—305 **5 Claims**

1. Apparatus for producing a high-current high-resolution electron beam comprising an electron source in the form of a cathode equipped with an electrical heater and magnetic shielding for shielding electrodes downstream of the electron source from the magnetic field of said electrical heater, and electron-optical beam treatment means having an input diaphragm facing said electron source, said apparatus comprising the improvement which consists in that:

said input diaphragm is indirectly heated to a substantial degree by said electrical heating means of said cathode, which is supplied with more current than is normally needed for producing the necessary electron emission for said electron-impact spectrometer, thereby increasing the amount of heat radiated away from said cathode device;

said cathode comprises a pointed body of LaB_6 (1,2) carried on and heated by a graphite carrier (3) and having its pointed end spaced from said carrier by substantially more than 1 mm, and

said shielding means includes a repeller (5) spaced from said LaB_6 body and having a slit running in a direction parallel to the long dimension of said carrier and also parallel to



the slit of said input diaphragm (6), said slit in said repeller (5) being traversed at its center by said LaB_6 body and having a width not substantially less than the width of said carrier (3) and a length not substantially less than the length of said carrier.

4,309,608

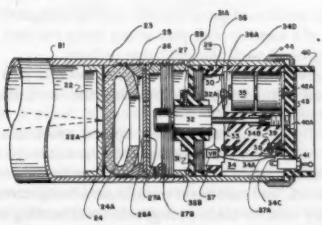
FLIGHTLINE GOGGLE TESTER

James R. Adamson, Jr., Alexandria, and Donald H. Jenkins, Fairfax, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 16, 1980, Ser. No. 150,463

Int. Cl.³ H01J *31/49*

U.S. Cl. 250—330 **7 Claims**



1. A hand held test device for image intensifier goggles comprising:

a first tubular electronic housing having an open end, a closed end and a maximum cross-sectional dimension substantially limited to three times the diameter of the objective aperture of said goggles;

an artificially illuminated planar resolution target assembly extending axially no more than twice said maximum dimension, mounted in said first housing and contacting said closed end;

a second tubular optical housing having an outer cross-section similar to but slightly smaller than the inner cross-section of said first housing, said second housing being no longer than twice said maximum dimension and slideably telescoped into said open end;

an adaptor at the exposed end of said second housing to receive an objective lens mounting tube of said goggles; and

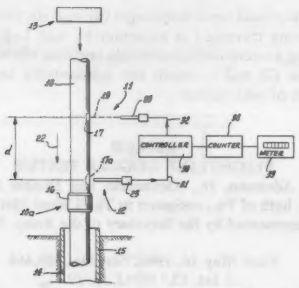
a lens means mounted in said second housing between said adaptor and said target to collimate the light from said target before it reaches said adaptor.

4,309,609

HEAT SCALING OF TRAVELING ARTICLES

Norman N. Sampson, 5461 Las Lomas St., Long Beach, Calif. 90815

Filed Jan. 7, 1980, Ser. No. 110,230
Int. Cl.[3] G01J 1/00
U.S. Cl. 250—341 2 Claims



1. In the method of progressively scaling elongated work, in the form of a metallic well pipe string being run into or out of an underground well, the steps that include

(a) relatively traveling the work successively past first and second stations, and also rotating the work during said traveling,

(b) locally heating successively spaced apart side portions only of the work as they pass the first station by transmitting a laser beam onto said work, there being a coating on the work, and said beam transmission being carried out to locally remove said coating, said local heating increasing the temperatures of said side portions to between 200° F. and 700° F., and the laser beam being of sufficient strength to achieve said temperatures of said work side portions,

(c) detecting said locally heated portions of the work as they relatively pass the second station by operating multiple heat sensor means proximate the work,

(d) and controlling said local heating of the work as a function of said detection, said controlling carried out to initiate said local heating in response to said detection,

(e) said local heating being carried out for predetermined time intervals and being interrupted between said time intervals,

(f) said (c) step including detecting the temperature of different side extents of the work at loci normal to the work axis,

(g) and including the step of dissipating heat from said portions of the work after they pass said second station.

4,309,610

METHOD OF DETERMINING THE LOCATION, ORIENTATION AND PATTERN OF REINFORCING MEMBERS IN REINFORCED CONCRETE

Bernd Hillemeier, Wiesbaden, Fed. Rep. of Germany, assignor to Hochtief Aktiengesellschaft vorm. Gebrüder Helfmann, Essen, Fed. Rep. of Germany

Filed May 2, 1980, Ser. No. 146,331
Claims priority, application Fed. Rep. of Germany, May 3, 1979, 2917796
Int. Cl.[3] G01J 1/00
U.S. Cl. 250—342 6 Claims

1. A method of detecting the disposition of metallic reinforcing members in a structure of reinforced concrete, comprising the steps of:

(a) inductively heating said members to a temperature above the ambient temperature; and

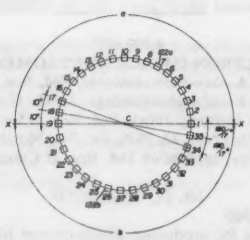
(b) detecting the thermal radiation pattern at said surface whereby heated regions thereof correspond to respective reinforcing members.

4,309,611

SCANNER FOR POSITRON EMISSION COMPUTED TOMOGRAPHY

Eiichi Tanaka, Mitaka; Norimasa Nohara; Takehiro Tomitani, both of Chiba; Kenji Ishimatsu, Abiko, and Katsumi Takami, Tokyo, all of Japan, assignors to National Institute of Radiological Sciences, Chiba and Hitachi Medical Corporation, Tokyo, both of, Japan

Filed Jan. 3, 1980, Ser. No. 109,252
Claims priority, application Japan, Jan. 12, 1979, 54-1228
Int. Cl.[3] G01T 1/20
U.S. Cl. 250—363 S 24 Claims



1. A scanner for positron emission computed tomography, comprising:

a rotary member rotatable within a plane of a slice about an axis perpendicular to this slice plane and having means to accommodate a subject for examination;

a drive means for rotating said rotary member in said slice plane; and

radiation detectors provided on said rotary member with the intervention by the center of rotation of the rotary member in between these detectors, said radiation detectors being arranged so that the spacing of at least a part of these detectors is irregular than the spacing of the rest of the detectors.

4,309,612
X-RAY DIAGNOSTIC GENERATOR WITH AN INVERTER SUPPLYING THE HIGH VOLTAGE TRANSFORMER

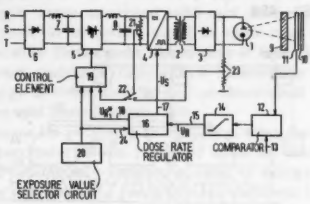
Horst Aichinger, Fuerth, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 27, 1979, Ser. No. 79,507

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1978, 2846458

Int. Cl.³ G03B *41/16*

U.S. Cl. 250—409 **1 Claim**



1. An x-ray diagnostic system with an x-ray tube, a high voltage transformer, an inverter supplying the high voltage transformer, the inverter having means for adjusting its pulse-pause ratio and a control loop means for controlling the output dose rate of the x-ray tube by varying the pulse-pause ratio of the inverter (4), the control loop means comprising a dose rate sensing means (11), dose rate reference means (13), comparator means (12) receiving signals from said sensing and reference means for generating an error signal and regulating means (5, 19) for regulating the inverter in such manner that, within a predetermined range of the error signal, the regulator means changes the pulse-pause ratio given a constant peak voltage being supplied to the inverter (4) and, upon transgressing this range, the regulator means changes the peak voltage supplied to the inverter (4) with constant maintenance of a minimum pulse-pause ratio.

4,309,613
X-RAY DIAGNOSTIC DEVICE FOR FLUOROSCOPIC EXAMINATION AND FILM EXPOSURE

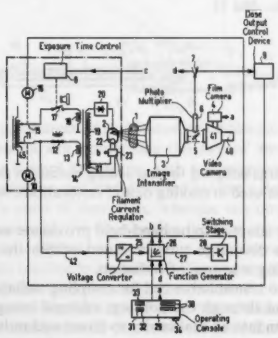
Klaus Brunn; Eike Matura, both of Erlangen; Walter Polster, Spardorf, and Herbert Schmitmann, Weiher, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 14, 1979, Ser. No. 94,767

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1978, 2855405

Int. Cl.³ H05G *1/30*

U.S. Cl. 250—409 **3 Claims**



1. An x-ray diagnostic device for fluoroscopy and exposure, comprising an image intensifier television chain, a dose output control device for dose output regulation during fluoroscopy, circuit means for sensing fluoroscopic voltage, automatic exposure control means comprising a function generator connected with said circuit means and in which the course of the exposure voltage is programmed as a function of the fluoroscopic voltage, said circuit means supplying a signal corresponding to the respective fluoroscopic voltage to said function generator, said function generator having a plurality of programs stored therein, and manual selector means for manually selecting one of the stored programs, characterized in that a setting device (31, 32) for the free setting of the exposure voltage is present; and in that the automatic exposure control means (6, 8, 26) is responsive to a fixed setting of the exposure voltage by the setting device to override said stored programs and to adjust the x-ray tube current given constant exposure time for patient thicknesses that lie below a lower value (D_1) and, for patient thicknesses exceeding this lower value, adjusts the exposure time given constant x-ray tube current.

4,309,614
DEVICE FOR COMPUTED TOMOGRAPHY

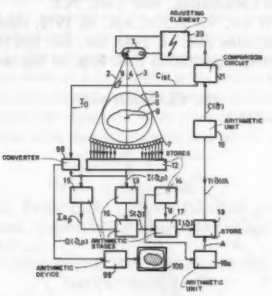
Wolfgang Wagner, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 10, 1979, Ser. No. 28,776

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1978, 2815347

Int. Cl.³ G03B *41/16*

U.S. Cl. 250—445 T **5 Claims**



1. In a device for determining the radiation absorption distribution in a plane of examination which comprises radiation source means for irradiating the plane of examination with penetrating radiation from a large number of directions; detector means including a plurality of detector elements for measuring intensity values of the radiation which passes through the plane of examination; measuring means for measuring the intensity of the radiation before it passes through the plane of examination; first arithmetic means for determining the absorption distribution in the plane of examination from the intensity values; and adjusting means for influencing the intensity of radiation emitted by the source means so that said intensity is larger in first regions of the plane then it is in second regions of the plane, said first regions absorbing radiation more strongly then said second regions;

wherein, as an improvement, the device further comprises additional arithmetic means for producing, for measuring values along all measuring paths at each angular position, adjusting signals for controlling the adjusting means, which additional arithmetic means include:

second arithmetic means for determining a mean noise value ($S(\theta)$) over all measuring values of the intensity ($I(\theta)$, p)) obtained from a detector element at position p within the detector means and at an angular position (θ), which is

proportional to the sum of the quantum noise of all measuring values;

third arithmetic means for determining a ratio of the mean noise value determined by the second arithmetic means and a predetermined, constant, maximum noise value; and

fourth arithmetic means for producing the adjusting signal from the ratio, the adjusting signal being the λ power of the ratio, λ being greater than zero and less than one, the adjusting signal being applied to control the adjusting means.

4,309,615

DEVICE FOR DETERMINING THE RADIATION ABSORPTION DISTRIBUTION IN A THREE-DIMENSIONAL EXAMINATION ZONE

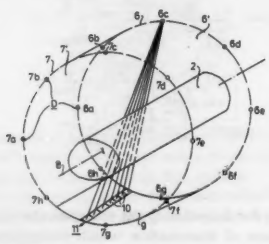
Günter Kowalski, Rellingen, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 34,306, Apr. 30, 1979, abandoned. This application Jun. 11, 1980, Ser. No. 158,189

Claims priority, application Fed. Rep. of Germany, May 2, 1978, 2819237

Int. Cl.[3] G03B *41/16*

U.S. Cl. 250—445 T 6 Claims



1. In a device for determining a radiation absorption distribution in a three-dimensional examination zone comprising: radiation sources which are situated in one plane and which irradiate the examination zone from different directions; detectors which detect the radiation which has passed through the examination zone and supply sets of output signals which are characteristic of the absorption of the radiation; and an arithmetic device which reconstructs the radiation absorption distribution on the basis of the output signals, the improvement wherein the radiation sources are arranged in a radiation source plane which is equidistant from an axis of rotation, the axis of rotation extending transversely to a first plane and a second plane, situated at a distance from and parallel to each other, the radiation sources being adjacently situated parallel to and rotatable around the axis of rotation and the detectors comprise at least two detector arrays which extend transversely to the axis of rotation and which consist of separate, adjacently situated detectors, said detector arrays being arranged in the said two planes, diametrically opposite the radiation sources with respect to the axis of rotation.

4,309,616

APPARATUS FOR PRODUCING ULTRAVIOLET RADIATION

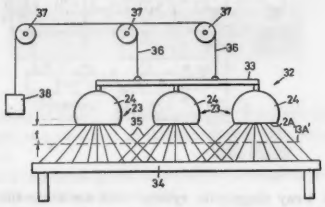
Friedrich Wolff, Bertholdstrasse 18, Frankfurt, Fed. Rep. of Germany (6000)

Division of Ser. No. 885,123, Mar. 10, 1978, Pat. No. 4,196,354, which is a division of Ser. No. 716,253, Aug. 20, 1976, Pat. No. 4,095,113. This application Nov. 28, 1979, Ser. No. 97,966

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1975, 2537855; Jan. 30, 1976, 2603460; Feb. 12, 1976, 2605487; May 31, 1976, 2624297

Int. Cl.[3] G01J *1/00*

U.S. Cl. 250—494 21 Claims



1. Apparatus for producing ultraviolet radiation and constituting or forming part of a quick-tanning sunlamp, comprising an irradiating unit including at least one source of ultraviolet radiation, means associated with said source and defining at least one substantially horizontal exit opening for ultraviolet radiation, said opening being disposed below said source, said source and said associated means being constructed and assembled to establish a high-density radiation field of predetermined area at a small distance from and below said exit opening, and means for intercepting at least the major percentage of wavelength bands of ultraviolet radiation below approximately 315 nm ahead of said field as considered in the direction of propagation of the radiation toward said field; and means for mounting said unit for substantially vertical movement toward and away from the body of a user of the apparatus to thereby adjust the position of said field relative to the body.

4,309,617

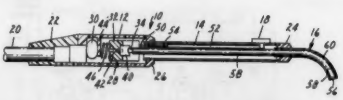
PULSED RADIATION SOURCE ADAPTED FOR CURING DENTAL RESTORATIVES

William H. Long, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation-in-part of Ser. No. 17,805, Mar. 5, 1979, abandoned. This application Jul. 24, 1980, Ser. No. 172,019

Int. Cl.[3] G01J *1/00*

U.S. Cl. 250—504 H 15 Claims



1. Apparatus adapted for hardening radiation polymerizable compositions used in making dental restorations, said apparatus comprising

a housing adapted to be hand-held proximate an oral cavity.

a gaseous discharge tube mounted within the housing for providing a source of radiation,

a radiation transmissive rod for coupling radiation from said tube and through the housing, said rod being adapted for insertion into an oral cavity to direct said radiation toward a said composition, and

a power supply including charge storage means for intermittent energization of said tube,

characterized by

said power supply including

(i) control means for applying a predetermined potential to said charge storage means during quiescent periods during which said discharge tube is unenergized,

(ii) hold-off means coupled to said control means for preventing said application of potential to said charge storage means for at least a predetermined duration following each energization of said discharge tube,

(iii) pulse control means for generating a train of a predetermined number of electrical pulses within a given interval of time, and for coupling said pulse train to trigger means associated with said discharge tube in response to an initiate signal to cause said discharge tube to be discharged a like number of times, each flash having associated therewith a substantially constant energy as controlled by said predetermined potential from said control means, and

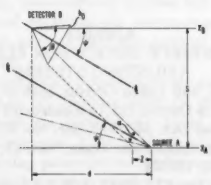
(iv) means for providing an indication when the intensity of successive flashes produced upon the discharge of said substantially constant amount of energy into the tube decreases to a predetermined minimum level, said indication providing means comprising counter means responsive to said pulse control means for representing the number of pulses coupled to said trigger means and for providing an indication when said number exceeds a predetermined value, such that the desirability of replacing said discharge tube is indicated prior to the onset of unsatisfactory curing of said compositions due to a fall-off in said intensity.

4,309,618

PRECISION OPTICAL DISTANCE MEASUREMENT

Herman L. Carter, Jr., Gillette; Robert R. Hart, Westfield, and Gerd F. H. Weissmann, Florham Park, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 5, 1980, Ser. No. 146,314
Int. Cl.³ G01C *3/08*
U.S. Cl. 250—561 **19 Claims**



1. A method of measuring distance or displacement parallel to a measurement axis comprising the step of directing light from a source toward a detector, with said source producing a cone of illumination and said detector having a light sensitive area within a cone of detection, wherein the output of said detector increases as the illumination incident upon said light sensitive area increases, and wherein said source and said detector move relative to each other along noncoincident axes which are parallel to said measurement axis,

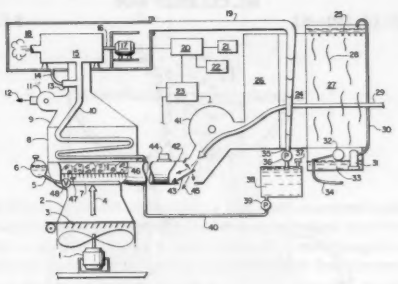
characterized in that the axis of said cone of illumination and the axis of said cone of detection are each tilted by angles greater than 10 degrees with respect to said measurement axis.

4,309,619

SOLAR ENERGY SYSTEM

Arthur L. Cahill, 1845 Vesta Way, Sacramento, Calif. 95825, and John L. Scott, 12652 Willowood Ave., Garden Grove, Calif. 92640

Filed Oct. 27, 1980, Ser. No. 200,906
Int. Cl.³ F03G *7/02*
U.S. Cl. 290—1 R **4 Claims**



1. An energy producing combination of two open and one closed thermodynamic systems wherein:

said closed thermodynamic system circulates a cryogenic fluid from a pressurized reservoir to a flash evaporator, said fluid then driving a mechanical energy transducer;

one of said open thermodynamic systems includes a heat sink open to the atmosphere to cool a heat transferring medium, said cooled medium then being used to condense the cryogenic fluid after which the medium helps to heat the cryogenic fluid at a later point in its closed cycle; and

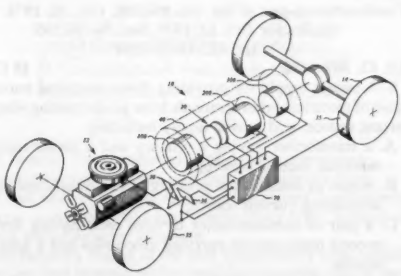
the second open thermodynamic systems includes adjustable atmospheric air induction to an oven containing the flash evaporator with means to warm said air by compression.

4,309,620

FLYWHEEL ELECTRIC TRANSMISSION APPARATUS

Ditmar H. Bock, Colden, N.Y., assignor to Calspan Corporation, Buffalo, N.Y.

Filed Dec. 3, 1979, Ser. No. 99,788
Int. Cl.³ B60L *11/14*
U.S. Cl. 290—4 R **49 Claims**



1. A flywheel electric transmission including:

a first electric machine;

a second electric machine adjacent to said first machine and adapted to be connected to a load shaft for rotation therewith;

a kinetic energy storing device operatively associated with said first and second machines and carrying the armatures therefor; and

means for recycling excess electrical power generated be-

tween said second machine and said kinetic energy storing device.

4,309,621

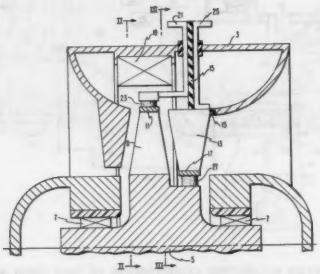
INTEGRATED FLUID DYNAMOELECTRIC MACHINE

Donald C. Litz, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 11, 1980, Ser. No. 111,418

Int. Cl.³ H02P 9/04

U.S. Cl. 290—52 **5 Claims**



1. A fluid dynamoelectric machine comprising, a rotor, a circular array of rotatable blades fixed to said rotor, and rotatable therewith, a shroud disposed at the radial outer tip of said rotatable blades, a stator encircling said rotor, a conductive coil disposed in said stator and encircling said rotor, a circular array of stationary blades disposed in said stator, a first brush so disposed to make electrical contact with said rotating shroud, a second brush disposed to make electrical contact with said rotating rotor, whereby in one mode of operation current flows through said shroud, rotatable blades and rotor so that when power is supplied to said brushes fluid is pumped by said machine and in another mode when pressurized fluid is directed through said blades said machine generates power.

4,309,622

PORTABLE ELECTRIC AUTOMOTIVE ENGINE CRANKING UNIT

Gerald G. Cottrell, 411 Clyde Ave., Wisconsin Rapids, Wis. 54494

Continuation-in-part of Ser. No. 954,858, Oct. 26, 1978. This application Oct. 11, 1979, Ser. No. 83,595

Int. Cl.³ H02J 7/04

U.S. Cl. 307—150 **18 Claims**

1. A power supply for providing direct electrical current to a pair of electrical input terminals from an alternating electrical current source, said power supply including:

A. a transformer having a primary and a center-tapped, 3 terminal, second winding;

B. means to connect the primary of the transformer to the alternating current source;

C. a pair of semiconductor devices each having first and second main current carrying electrodes and a gate electrodes;

D. a pair of output cables;

E. means for connecting an interior end of each of said output cables to a separate one of the pair of engine electrical input terminals;

F. an interior end of a first of said output cables being electrically connected to the center terminal of said transformer's secondary winding;

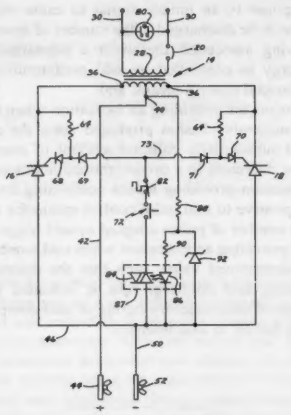
G. the first main current carrying electrodes of each of said semiconductors being connected to a separate one of the outside terminals of the transformer's secondary winding;

H. the second main current carrying electrodes of each of said semiconductors being connected together and to an interior end of a second of said output cables;

I. a gate control circuit connected to the gate electrodes of said semiconductor devices;

J. switch means connected into said gate control circuit to selectively cause said gate control circuit to switch said semiconductor devices into conduction;

K. means for sensing the voltage between the first and second output cables and for enabling the gate control circuit only when the voltage between the first and second output cables has a predetermined polarity and a magnitude greater than a predetermined threshhold level;



L. said means for sensing the voltage comprising:

(1) a light-emitting voltage sensing control means connected between the first and second cables for providing a light emitted signal when the voltage between the first and second output cables has a predetermined polarity and a magnitude greater than the predetermined threshhold level,

(2) switching means connected to the gate control circuit and having conductive and non-conductive states, the switching means switching from the non-conductive to the conductive state in response to the signal from the voltage sensing control.

4,309,623

POWER SOURCE DEVICE FOR ELECTRONIC COUNTING SYSTEM

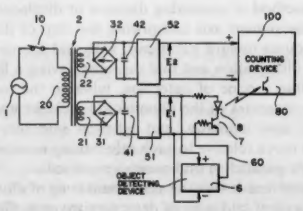
Katsumi Iwatani, and Takeo Ohashi, both of Nagaokakyo, Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Oct. 24, 1979, Ser. No. 87,863

Claims priority, application Japan, Nov. 13, 1978, 53/139499; Nov. 13, 1978, 53/139501

Int. Cl.³ H03K 3/013, 17/16

U.S. Cl. 307—200 A **6 Claims**



1. A power source device comprising a a.c. power supplying means,

a first d.c. power circuit means having a first predetermined rate of power discharge connected to said a.c. power supplying means for supplying an object detecting device with a d.c. power,

a second d.c. power circuit means having a second predetermined rate of power discharge connected to said a.c. power supplying means for supplying an electronic counting device with a d.c. power,

said detecting device being adapted to supply said electronic counting device with input trigger pulses thereto,

said first d.c. power circuit means having a rate of discharge less than that of said second d.c. power circuit means,

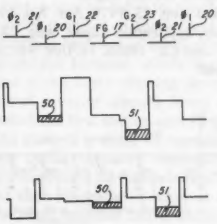
so that the voltage of said second d.c. power circuit means during a failure of said a.c. power supplying means will be decreased to such a level that said counting device will not accept an input signal for counting if said detecting device generates an erroneous pulse during said a.c. power supplying means failure.

4,309,624

FLOATING GATE AMPLIFIER METHOD OF OPERATION FOR NOISE MINIMIZATION IN CHARGE COUPLED DEVICES

Jaroslav Hynecek, Dallas, and Charles G. Roberts, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 3, 1979, Ser. No. 54,758
Int. Cl.³ G11C *19/28*; H01L *29/78*
U.S. Cl. 307—221 D **3 Claims**



1. In a charge-coupled device having a floating gate electrode, control gate electrodes partially overlapping said floating gate electrode, and first and second sets of phase electrodes, a method of operating the charge-coupled device by transferring charge packets to obtain readout therefrom, said method comprising:

simultaneously imparting potentials to the control gate electrodes disposed on opposite sides of the floating gate electrode which are substantially equal voltages below and above a magnitude V_T, and at the same time, simultaneously imparting potentials to the first and second phase electrodes which are above and substantially equal to the magnitude V_T respectively;

transferring charge packets through one transfer sequence by simultaneously changing the potentials of the control gate electrodes to be substantially equal to the magnitude V_T, and at the same time, simultaneously reversing the potentials imparted to the first and second phase electrodes such that the potentials are substantially equal to and above the magnitude V_T respectively;

repeating the sequence of altering potentials imparted to the control gate electrodes and the first and second phase electrodes to successively advance such charge packets along the charge-coupled device; and

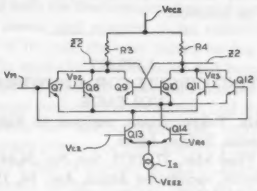
successively reading the respective charge packets as they are disposed beneath the floating gate electrode.

4,309,625

FLIP-FLOP CIRCUIT

Toru Takahashi, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 31, 1979, Ser. No. 89,743
Claims priority, application Japan, Oct. 31, 1978, 53/134296
Int. Cl.³ H03K *3/286, 3/289*
U.S. Cl. 307—272 A **7 Claims**



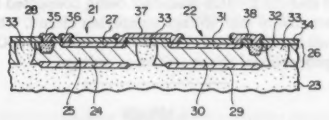
1. A flip-flop circuit comprising a first node, a second node, a first common node, a second common node, a first transistor having a collector coupled to said first node, a base coupled to said second node, and an emitter coupled to said first common node, a second transistor having a collector coupled to said second node, a base coupled to said first node and an emitter coupled to said first common node, a third transistor having a collector coupled to said first node and an emitter coupled to said second common node, a fourth transistor having a collector coupled to said second node and an emitter coupled to said second common node, a constant current source means, means responsive to a signal for selectively coupling one of said first common node and said second common node to said constant current source means, a control terminal, a fifth transistor having a collector coupled to said first node, a base coupled to said control terminal and an emitter coupled to said second common node, and a sixth transistor having a collector coupled to said second node, a base coupled to said control terminal and an emitter coupled to said first common node.

4,309,626

DIFFUSED RESISTOR

Osamu Kudo, Tokyo, Japan, assignor to Fujitsu Limited, Japan

Filed Apr. 11, 1980, Ser. No. 139,169
Claims priority, application Japan, Apr. 16, 1979, 54-46442
Int. Cl.³ H01L *27/04*
U.S. Cl. 307—303 **16 Claims**



1. A resistor, for a semiconductor device, comprising:

a semiconductor substrate of a first conductivity type;

first and second isolated regions of a second conductivity type, opposite to said first conductivity type, formed on said semiconductor substrate;

a first impurity region of the first conductivity type formed in said first isolated region, said first impurity region having first and second end portions and having first and second terminals formed on said first and second end portions, respectively;

a second impurity region of the first conductivity type formed in said second isolated region, said second impurity region having third and fourth end portions and having third and fourth terminals formed on said third and fourth end portions, respectively, said third terminal electrically connected only to said second terminal;

a fifth terminal formed on said first isolated region;

a sixth terminal formed on said second isolated region and electrically connected to said fourth terminal; and

means for supplying potentials to said first, fourth and fifth terminals so that depletion layers are generated in said first and second isolated regions, said means for supplying potentials including means for maintaining a substantially constant potential across said first and fifth terminals, said substantially constant potential of a polarity to reverse bias the pn junction.

4,309,627

DETECTING CIRCUIT FOR A POWER SOURCE VOLTAGE

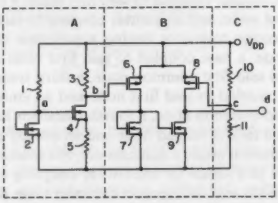
Junichi Tabata, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Mar. 27, 1979, Ser. No. 24,441

Claims priority, application Japan, Apr. 14, 1978, 53-43907; Apr. 14, 1978, 53-43908

Int. Cl.³ H03K *5/24, 17/30;* G08B *21/00*

U.S. Cl. 307—362 **4 Claims**



1. In a detecting circuit for a power source voltage: a reference voltage generating circuit for generating a reference voltage; a voltage dividing circuit for dividing the power source voltage; and a voltage comparing circuit having one input terminal connected to receive the reference voltage from said reference voltage generating circuit and another input terminal connected to receive the divided voltage from said voltage dividing circuit; wherein said reference voltage generating circuit comprises at least two MOS-transistors having different threshold voltages and having the same polarity, one of said MOS-transistors having the gate thereof connected to the drain thereof and said drain being connected to the gate of the other MOS-transistor, the drain and source of said other MOS-transistor each being connected to a resistor, and the drain of said other MOS-transistor being connected to the one input terminal of said voltage comparing circuit, whereby the difference between the threshold voltages of said MOS-transistors is proportional to the reference voltage.

4,309,628

PULSE GENERATION BY CHANGING MAGNETIC FIELD

John R. Wiegand, Valley Stream, N.Y., assignor to The Echlin Manufacturing Company, Branford, Conn.

Filed Feb. 22, 1980, Ser. No. 123,703

Int. Cl.³ H03K *3/45*

U.S. Cl. 307—419 **13 Claims**

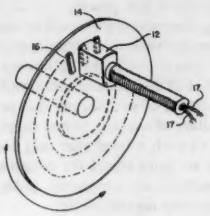
1. A pulser for use in the generation of a pulse in response to magnetic field distortion comprising:

first and second magnets spaced apart from one another and oriented relative to one another so that a first pole of said first magnet and a second pole of said second magnet define a working surface of said pulser, the polarity of said magnets having opposite orientation so that said first pole of said first magnet and said second pole of said second magnet have opposite polarities,

said magnets establishing a magnetic field between them,

a Wiegand wire module having a predetermined position in the field between said magnets, said module including a Wiegand wire segment and a pickup coil,

said first and second magnets and said module all being positioned rearward of said working surface of the pulser, the configuration of said magnetic field between said magnets distorting materially in response to a material change in the reluctance path provided adjacent to and forward of said working surface of the pulser,



said position of said Wiegand wire in said field being such that said wire switches state in response to said material distortion of said field.

4,309,629

MOS TRANSISTOR DECODER CIRCUIT

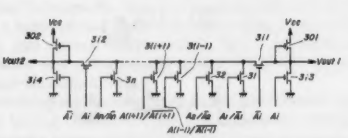
Setsufumi Kamuro, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 23, 1979, Ser. No. 69,085

Claims priority, application Japan, Aug. 25, 1978, 53-104193

Int. Cl.³ H03K *19/094, 19/20*

U.S. Cl. 307—449 **6 Claims**



1. An MOS transistor decoder circuit for decoding codes formed of a plurality of input bits A_1–A_n into two outputs Vout1, Vout2; said decoder circuit comprising:

first and second output load elements for generating the outputs Vout1, Vout2, respectively;

a plurality of bit receiving channels, the number of channels being one less than the total number of inputs, each bit receiving channel corresponding to an individual particular input A_1–A_n, each bit receiving channel producing a disable signal upon failure of its associated input to correspond to the value of its corresponding bit in a desired code;

the one of said inputs A_1–A_n not selected being an output selection input; and

first and second output selecting channels responsive to said output selection input and its logical complement, respectively, for enabling said first and second load elements, respectively;

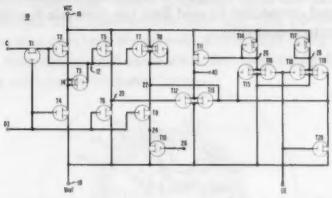
said first and second load elements being driven only when enabled by said first and second output selecting channels and not disabled by any of said plurality of bit receiving channels, whereby said decoder functions to decode one of two different desired codes which differ by one binary bit to thereby produce one of said outputs Vout1, Vout2 when its corresponding desired code is introduced into said decoder circuit.

4,309,630

BUFFER CIRCUITRY

Ernst H. Young, Jr., Center Valley, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 10, 1979, Ser. No. 101,485
Int. Cl.[3] H03K *17/693, 17/04, 17/094*
U.S. Cl. 307—584 9 Claims



1. Buffer circuitry comprising:

first and second switching devices which each have a control terminal and output circuitry, the output circuitry of the devices being coupled together and being coupled to an output terminal of the buffer circuitry;

the relative device sizes being such that the resistance of the first switching device being substantially greater than the resistance of the second switching device;

a first inverter circuit having an input terminal which is coupled to a first input terminal of the buffer circuitry;

a second inverter circuit having a first input terminal which is coupled to a second input terminal of the buffer circuitry and having a second input terminal which is coupled to the control terminal of the second switching device and to an output terminal of the first inverter circuit and having an output terminal which is coupled to the control terminal of the first switching device; and

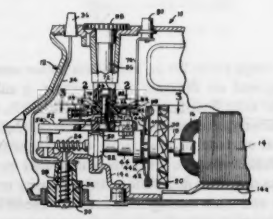
the first and second inverter circuits being configured to selectively control the first and second switching devices such that at the start of a cycle of operation the output terminal of the buffer circuitry essentially electrically floats in potential and then thereafter it first assumes a first logic level and then thereafter it stays at the first logic level if the first input terminal of the buffer is at the first logic level or it assumes a second logic level if the potential of the first input terminal is at the second logic level.

4,309,631

KITCHEN MIXER HAVING MEANS TO INSTANTANEOUSLY INCREASE SPEED WHEN DESIRED

Arthur C. Christensen, Thomaston, Conn., assignor to Scovill Inc., Waterbury, Conn.

Filed Oct. 22, 1980, Ser. No. 199,661
Int. Cl.[3] H02P *7/08*
U.S. Cl. 310—50 6 Claims



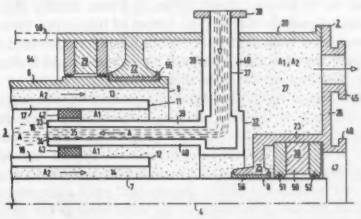
1. In a kitchen mixer having a motor with a speed control including a drive shaft having a collar mounted for longitudinal movement with respect thereto and centrifugally operated structure on the shaft adjacent the collar and adapted to move the collar away from the structure as the speed of the motor increases, a contact blade with a first contact disposed adjacent the shaft and adapted to be moved by the collar, mounting means disposed adjacent the shaft and having a cam follower to be shifted longitudinally of the shaft and having a second contact aligned with the first contact, disc cam means adjacent the mounting means and adapted to be rotated and shifted longitudinally of its axis, the cam means having a first level with a generally snail-shell-like contour and being outwardly stepped beyond the first level to present a second level having a similar but larger snail-shell-like contour, and electric circuit means connecting the contacts and the motor in series, whereby the rotary position of the cam will control the speed of the motor and a shift of the cam on its axis alters the position of mounting means as the follower rides up on the step to increase the speed over the set speed normally resulting at the given rotary position of the cam.

4,309,632

ELECTRIC MACHINE WITH A ROTOR WITH A SUPERCONDUCTING FIELD WINDING

Otto Müller, Effeltrich; Dieter Kullmann, Langenzenn, and Erich Weghaüpt, Mülheim, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 6, 1979, Ser. No. 72,639
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1978, 2841163
Int. Cl.[3] H02K *9/00*
U.S. Cl. 310—52 15 Claims



1. In an electric machine with a rotor rotatably mounted in a stationary machine housing for rotation about an axis of rotation, and containing a superconducting field winding to be cooled, one side of the rotor body being designed as a cylindrical shaft end piece, said cylindrical shaft end piece deflecting from its ideal central position with respect to the axis of rotation, a nonrotating part of a connector head surrounding said cylindrical shaft and piece, at least one bearing and at least one sealing device disposed between one shaft end piece and the nonrotating part of the connector head, and means for permitting coolant transfer at the connector head, the improvement comprising:

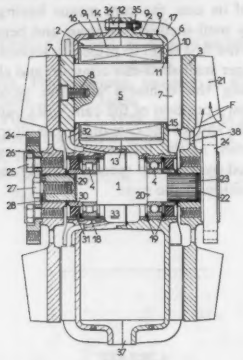
a. the bearing having such close radial tolerances that the nonrotating part of the connector heat part will follow at least the main part of the radial deflections of the shaft end piece from its ideal position; and

b. the nonrotating part of the connector head connected directly or indirectly with the stationary machine housing in such a manner that it is capable of said radial deflections.

4,309,633
EDDY CURRENT SPEED REDUCERS

Andre J. P. Marandet, Saint-Gratien, France, assignor to Labvia, S.G.E., Paris, France

Filed Oct. 19, 1979, Ser. No. 86,360
Claims priority, application France, Oct. 25, 1978, 78 30354
Int. Cl.[3] H02K *49/02*
U.S. Cl. 310—105 8 Claims



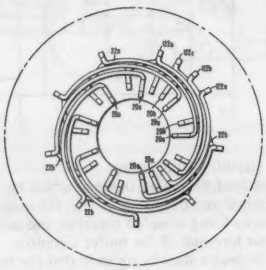
1. An eddy current speed reducer for slowing down a shaft, particularly a vehicle driving shaft, and comprising on the one hand an inductive stator formed from a support and ring of coils mounted on this support, having axes parallel to the shaft to be slowed down, which is mounted in two bearings carried by said support, each coil itself comprising a magnetic core surrounded by a winding of conducting wire and capped axially at its two ends by two magnetic plates forming flared pole pieces, and on the other hand an armature rotor formed from two discs made from a magnetic material fixed in rotation on the shaft to be slowed down so as to frame axially the stator and to travel past the flared pole pieces of this latter, these discs being provided with external cooling fins, characterized in that the support for the coils is formed by a closed rigid hollow and annular housing made from a non-magnetic metal or alloy, preferably liquid tight, the two walls of this housing perpendicular to the axis of the ring, having respectively therethrough openings through which pass jointingly the ends of cores of coils so that only the flared pole pieces appear outside the housing, said housing being formed as two half-shells clamped axially one against the other, the mutual axial clamping of the two half-shells being ensured, at the same time as the mounting of the coils on the housing, by screwing the flared polar pieces on cores by means of screws, the screwing of the flared pole pieces on the cores involving a prestressing effect, the axial contact between the two half-shells taking place before the axial contact between the flared pole pieces and the cores.

4,309,634
STATOR WINDING PERIPHERAL CONNECTOR RINGS

James S. Koroly, North Huntingdon, Pa., and Robert M. Sexton, Johns Island, S.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 10, 1980, Ser. No. 139,084
Int. Cl.[3] H02K *17/00*
U.S. Cl. 310—201 3 Claims

1. A dynamoelectric machine comprising:
a generally tubular stator core having a plurality of slots formed in said core's inner periphery; and
a stator winding disposed in said slots, said stator winding comprising;
a first top coil side disposed in a first slot of said stator core, said first top coil side extending axially a first predetermined axial distance beyond said stator core's first end;
a first bottom coil side disposed in a second slot of said stator core, said second slot being circumferentially separated from said first slot by a coil pitch, said first bottom coil side extending axially a second predetermined axial distance beyond said stator core's first end;
a first connector ring segment connecting said first top and bottom coil sides at said stator core's first end, said ring segment comprising;
(a) a first portion extending a predetermined arcuate distance from and connected to said first top coil side toward said first bottom coil side;

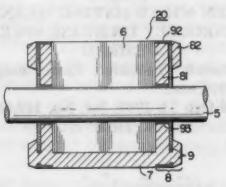


(b) a second portion extending the remaining arcuate distance between the first portion and said first bottom conductor, said second portion being attached to said first portion and said first bottom coil side; and
(c) wherein said predetermined arcuate distance extended by said first portion is substantially longer than said remaining arcuate distance extended by said second portion; and
wherein said first preselected axial distance is greater than said second predetermined axial distance.

4,309,635
SQUIRREL-CAGE ROTOR HAVING END RINGS OF DOUBLE STRUCTURE

Makio Sei, Nakaminato, and Kunio Miyashita, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 1, 1980, Ser. No. 117,623
Claims priority, application Japan, Feb. 7, 1979, 54-12303
Int. Cl.[3] H02K *3/06*
U.S. Cl. 310—211 6 Claims



1. A squirrel-cage rotor for an induction motor comprising a shaft to be disposed on the axis of the motor, a substantially cylindrical rotor core fixedly mounted on said shaft, a plurality of conductor bars received in respective slots formed along the outer peripheral surface of said rotor core and extending in substantially parallel relation with the axis of said motor, and a pair of end rings disposed adjacent to the opposite end faces of said rotor core and each acting as means for electrically connecting the associated ends of said conductor bars, each of said end rings comprising a first ring portion having one side surface disposed in contact with the associated end face of said rotor core and extending in a direction of a circumference around the axis of said shaft, said first ring portion being electrically connected to said conductor bars and having a relative-

ly-large width in the radial direction, a plate member of a magnetic material contacting the other side surface of said first ring portion and being coaxial with the axis of said shaft, and a second ring portion disposed on said magnetic member and extending in a direction of a circumference around the axis of said shaft, said second ring portion being electrically connected to said first ring portion and to said conductor bars and having a relatively-small width in the radial direction and an axial sectional area which is smaller than the axial sectional area of said first ring portion, said first ring portions and said second ring portions of said pair of end rings being made of the same material as said conductor bars and being formed integrally with said conductor bars.

4,309,636

INSULATION CAPS FOR STATOR WINDING HEAD CONNECTIONS OF AN ELECTRIC MACHINE

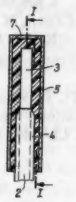
Hans-Jürgen Pollok, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 10, 1979, Ser. No. 65,629

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1978, 2836230

Int. Cl.³ H02K *3/46*

U.S. Cl. 310—260 **1 Claim**



1. A stator winding for an electric machine having a stator with insulated conductors soldered together at a plurality of adjacent and parallel head connections on both end faces of the machine, each head connection being covered by a trough-shaped insulating cap having a bottom placed adjacent to the associated head connection, side walls, and end walls, the side walls and the end walls overlapping the conductor insulation, the cap being filled with a casting resin hardened in place, the improvement comprising:

the bottom of each insulating cap at one end face of the stator having a laterally placed filling hole located near one end wall, and juxtaposed insulating caps at said one end face oriented so that the filling hole in one cap bottom is positioned 180° away from the filling holes in the bottom of the next adjacent insulating caps.

4,309,637

ROTATING ANODE X-RAY TUBE

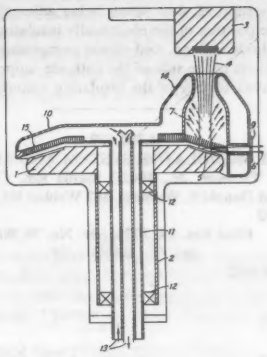
Richard W. Fetter, Warrenville, Ill., assignor to EMI Limited, Hayes, England

Filed Nov. 13, 1979, Ser. No. 93,238

Int. Cl.³ H01J *35/04*

U.S. Cl. 313—60 **20 Claims**

10. A rotating anode X-ray tube including an envelope and, mounted therein: an anode mounted for rotation about an axis thereof; an electron gun arranged to direct a beam of electrons to be incident on the surface of said anode at a region which moves over said surface in the course of said rotation; a cover, fixed relative to said electron gun, arranged to be closely adjacent to a substantial part of the surface of said anode on



which the beam is incident and including an aperture by which the electron beam may reach said surface.

4,309,638

ELECTRON GUN CATHODE SUPPORT

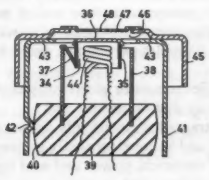
Johannes H. T. Van Roosmalen, and Franciscus C. M. De Haas, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 11, 1979, Ser. No. 56,481

Claims priority, application Netherlands, Jul. 20, 1978, 7807757

Int. Cl.³ H01J *29/02*

U.S. Cl. 313—447 **4 Claims**



1. An electron gun having an axis comprising:

a cathode having a substantially planar electron emissive surface;

a cathode support having a cylindrical side and first and second open ends, the first end substantially lying in a single plane;

an electrically insulating mateial in which the cathode is mounted, said material and cathode being mounted in the cathode support such that the cathode is electrically insulated from the cathode support and the emissive surface is at the first open end of the cathode support;

a substantially planar anode having an aperture theren, said anode being attached to the first end of the cathode support; and

means for fixing the position of the cathode support such that the center of the emissive surface and the center of the aperture in the anode are both on the gun axis, and the first end of the cathode support is substantially parallel to the aperture in the anode, said means being adjustable at least before the position of the cathode support is fixed;

characterized in that:

the electrically insulating material has a convex surface facing the side of the cathode support; and

the electron gun further comprises means for fixing the

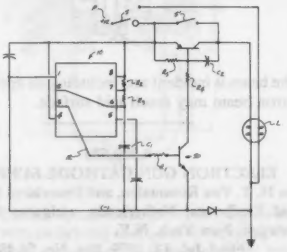
position of the electrically insulating material and the cathode in the cathode support such that the emissive surface is positioned to be parallel to the first end of the cathode support, said means being adjustable at least before the position of the electrically insulating material and the cathode is fixed, said means comprising at least three depressions in the side of the cathode support pressing on the convex surface of the insulating material.

4,309,639

LIGHT MODULATOR SYSTEM AND METHOD

Herbert T. Thrower, Jr., 4942C Sardis Rd., Charlotte, N.C. 28211, and Donald S. Wasness, 462 Webber Rd., Spartanburg, S.C. 29302

Filed Sep. 24, 1979, Ser. No. 78,388
Int. Cl.[3] B60Q *1/02*
U.S. Cl. 315—82 **20 Claims**



1. An improved light modulator system for an incandescent light comprising:

(a) a timer switch means electrically connectable to a source of electric power, said timer switch means being adapted for operation at a combination of a switching frequency of from 2 to 10 cycles per second, and a duty cycle of at least 30 percent;

(b) an amplifier transistor electrically connected to an output of said timer switch means; and

(c) a driver transistor electrically connected to said amplifier transistor and being electrically connectable between said source of electrical power and said light whereby during operation when said system is connected between said source of power and said light, said light is turned on and off with such frequency that improved conspicuity and subjective light enhancement result without a total loss of luminescence of the light.

10. A method of modulating an incandescent light to realize improved conspicuity of the light and subjective enhancement of illumination of the light comprising the steps of including a switching means between the light and a source of electrical power, said switching means operating at a combination duty cycle of at least 30 percent and a switching frequency in range 0f from 2 to 10 cycles per second, whereby said light is modulated at a rate that total loss of illumination is avoided.

4,309,640

CIRCUIT AND METHOD FOR CORRECTING SIDE PINCUSHION DISTORTION AND REGULATING PICTURE WIDTH

Samuel Y. Gordon, Tualatin, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

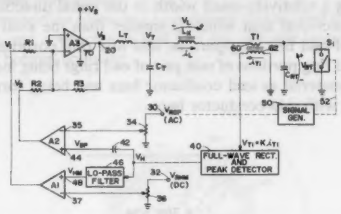
Filed Jan. 25, 1980, Ser. No. 115,523
Int. Cl.[3] H01J *29/70*
U.S. Cl. 315—371 **10 Claims**

1. A circuit within a cathode-ray tube electromagnetic deflection system for correcting side pincushion distortion and regulating picture width, said circuit comprising:

(a) a yoke inductance;

(b) means including a source of DC supply potential for producing a delfection current through said inductance;

(c) means for receiving an AC reference signal representing the desired amplitude modulation of said deflection current and a DC reference signal representing the desired average peak value of said deflection current;



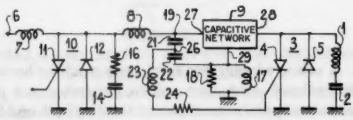
(d) means responsive to said deflection current, said AC reference signal, and said DC reference signal for modulating the magnitude of said DC supply potential so as to cause the amplitude of said deflection current to follow said AC reference signal and the average peak value of said deflection current to follow said DC reference signal.

4,309,641

LINE SCANNING CIRCUIT FOR A TELEVISION RECEIVER

John Shepherd, Paris, France, assignor to Thomson-Brandt, Paris, France

Filed Dec. 27, 1979, Ser. No. 107,603
Claims priority, application France, Jan. 9, 1979, 79 00420
Int. Cl.[3] H01J *29/70*
U.S. Cl. 315—408 **6 Claims**



1. A line scanning circuit for a television receiver, comprising:

a line deflector coil connected in series with a trace capacitor,

a first bidirectional switch comprising a thyristor and a diode connected head to tail, this first switch being connected in parallel with the unit formed by the line deflector and the trace capacitor,

a second bidirectional switch comprising a thyristor and a diode connected head to tail, and controlled by a signal from a circuit oscillating at the line frequency,

a reactive circuit comprising a first inductance in series with a capacitive network, and electrically connecting the junction between the anode of the thyristor and the cathode of the diode of said first switch to the junction between the anode of the thyristor and the cathode of the diode of said second switch, said junction of said second switch being furthermore connected to a DC voltage source through a second inductance, and said second switch allowing when it is in its closed position, on the one hand, an oscillating current to pass into the first switch so as to enable the current in the thyristor of said first switch to be cancelled out and, on the other hand, energy to be transferred from the source to the deflector coil associated with the trace capacitor,

wherein said first switch is controlled at the gate of its thyristor by a signal derived from the signal available at the junction

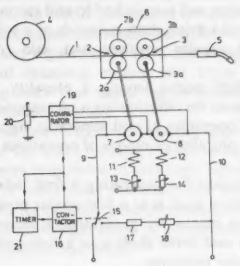
between said first inductance and said capacitive network of the reactive circuit.

4,309,642

DEVICE FOR FEEDING A WIRE ELECTRODE

Knut F. I. Boden; Christian J. Henningsen, and Arvo Köster, all of Laxa, Sweden, assignors to ESAB Aktiebolag, Sweden

Filed Jan. 24, 1979, Ser. No. 6,249
Claims priority, application Sweden, Jan. 27, 1978, 7801012
Int. Cl.³ H02P 1/54
U.S. Cl. 318—113 7 Claims



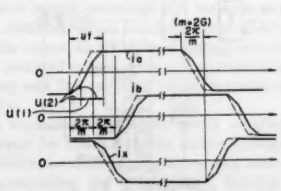
4. A device for feeding a consumable wire electrode comprising, two feeding units for feeding a wire electrode arranged in tandem, each of the feeding units including a pair of rolls and a direct current motor having an armature for driving one of the rolls of the pair, means for connecting the armatures of said motors in series with each other to a supply voltage, means for comparing the armature voltage of each of the two motors with a predetermined voltage, said comparing means being arranged to generate a signal when the deviation of the armature voltage of any motor from the predetermined voltage is greater than a given value, a switch in the armature circuit of the motors, and means controlled by said signal for causing said switch to disconnect the armature circuit from the supply voltage.

4,309,643

DRIVING METHOD OF MOTOR FED BY ELECTRIC VALVE FEEDING APPARATUS AND THE SAME APPARATUS

Masahiko Akamatsu, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 862,959, Dec. 21, 1977, abandoned. This application Dec. 17, 1979, Ser. No. 104,532
Claims priority, application Japan, Dec. 21, 1976, 51-154585
Int. Cl.³ H02K 29/00; H02P 7/00
U.S. Cl. 318—138 31 Claims



1. An electric valve-feeding motor apparatus commutated with internal electromotive force which comprises:

an AC motor having AC windings which generate an internal electromotive force;

an electric valve circuit for feeding current to the AC windings; and

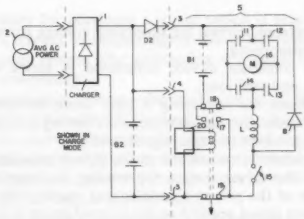
means for commutating the electric valves in the electric valve circuit by the internal electromotive force of the AC windings under the driving condition of $U > \pi/m$ wherein m designates the commutation times per one AC cycle of the electric valve circuit and U designates a commutation overlapping angle of the electric valves.

4,309,644

ELECTRIC VEHICLE CONTROLLER ADAPTED FOR CHARGE STATION CONNECTION

Eberhart Reimers, 8807 Strause Ct., Springfield, Va. 22153, and Elmo E. Moyer, 7 Fenlon St. West, Saratoga Springs, N.Y. 12866

Filed May 5, 1980, Ser. No. 146,874
Int. Cl.³ H02P 1/00
U.S. Cl. 318—139 5 Claims



1. An electrical vehicle controller adapted for on-off propulsion of an electric vehicle, said electric vehicle including at least one on-board storage battery having a given voltage rating, at least one on-board dc drive motor having a series field winding and an armature winding, forward, reverse and neutral electric connect-disconnect motor control means, and at least one variable conduction duty cycle switching means, comprising:

connect-disconnect electric terminals for electrically connecting said vehicle controller across an external charge station storage battery, said charge station storage battery having a voltage rating greater than the voltage rating of said on-board storage battery; and

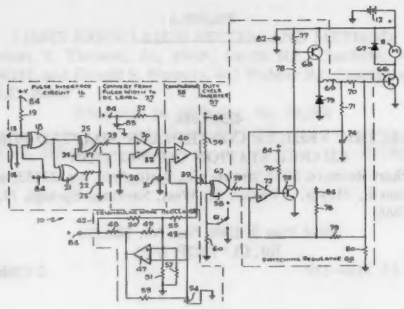
mode transfer switching means for electrically connecting said on-board storage battery across said dc drive motor for speed controlled propulsion of said electric vehicle and for electrically connecting said on-board storage battery across said external charge station storage battery when said vehicle controller is connected to said external charge station storage battery through said connect-disconnect electric terminals, in first and second operational modes, respectively, said mode transfer switching means being adapted to electrically connect said armature winding and said series field winding of said dc drive motor in series across said on-board storage battery through said conduction duty cycle switching means in said first operational mode and being adapted to electrically connect said on-board storage battery and said series field winding of said dc drive motor in series across said external charge station storage battery through said conduction duty-cycle switching means and through said connect-disconnect electric terminals in said second operational mode with said motor control means being nonconductive in said second operational mode.

4,309,645

DC MOTOR SPEED CONTROLLER

Dail A. De Villeneuve, 8832 Shirley Ave., Suite 4, Northridge, Calif. 91324

Division of Ser. No. 703,171, Jul. 7, 1976, Pat. No. 4,153,853.
This application May 7, 1979, Ser. No. 36,791
Int. Cl.³ H02P 5/16
U.S. Cl. 318—341 13 Claims



1. An electronic circuit for supplying voltage from a source to a load, comprising:

a power transistor device connected in series with said source and said load;

driver means for supplying a base drive current to said power transistor, said driver means having a control input which receives an input signal; and

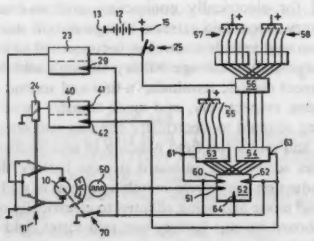
control circuitry, connected to the power transistor device and to the driver means, for sensing the base-to-emitter voltage of the power transistor and varying the value of the input signal applied to the control input as a function of the sensed base-to-emitter voltage so as to establish a base drive current that is near the minimum required to maintain collector-emitter saturation of said power transistor device.

4,309,646

CONTROL ARRANGEMENT FOR WINDSHIELD WIPER APPARATUS

Karl-Heinz Liedtke, Lauffen, and Horst Rachner, Bietigheim-Bissingen, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Apr. 18, 1980, Ser. No. 141,465
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1979, 2917324
Int. Cl.³ H02P 1/04
U.S. Cl. 318—443 3 Claims



1. Windshield wiper apparatus comprising:

a voltage source;

a reversible wiper motor means adapted to drive a drive shaft means for oscillating a windshield wiper;

reversing switch means for coupling said motor to said voltage source, said switch means having first and second conductive states and being responsive to first and second control signals for switching between said first and second conductive states, said reversing switch means in said first conductive state coupling said motor to said voltage source such that said drive shaft means rotates in a first direction, said reversing switch means in said second conductive state coupling said motor to said voltage source such that said drive shaft means rotates in a second direction;

control means for generating said control signals such that said reversing switch means is switched to said first conductive state when said drive shaft means is at a first angular position and is switched to said second conductive state when said drive shaft means is at a selected one of two second angular positions and; said control means comprising:

operating switch means having a plurality of operating switch positions for determining a corresponding plurality of modes of operation of said apparatus, means for selecting one of a plurality of modes of operations of said apparatus;

first position means for generating a first indicating signal when said drive shaft is at a first anglar position;

second position means for generating a second indicating signal when said drive shaft is at a first one of said two second angular positions;

third position means for generating a third indicating signal when said drive shaft is at a second one of said two second angular positions;

first store means for storing a first signal indicating that said selecting means has selected a first one of said plurality of modes of operations and for coupling said voltage source to said switch means when said first signal is stored;

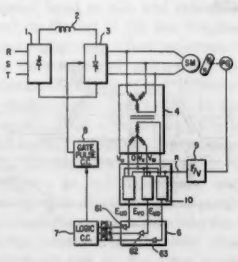
a reversing store means for storing a first control signal each time said first position means generates said first indicating signal, and for storing a second control signal when said second position means generates said second indicating signal and said selecting means is selecting said first mode of operation or when said third position means generates said third indicating signal and said selecting means is selecting a second one of said plurality of modes of operation, and for supplying said first or second stored control signal to said reversing switch means.

4,309,647

COMMUTATORLESS MOTOR DEVICE

Takashi Morishita, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 26, 1979, Ser. No. 15,237
Claims priority, application Japan, Feb. 27, 1978, 53/20856
Int. Cl.³ H02P 7/42, 5/40, 7/62
U.S. Cl. 318—721 3 Claims



1. A commutatorless motor device comprising:

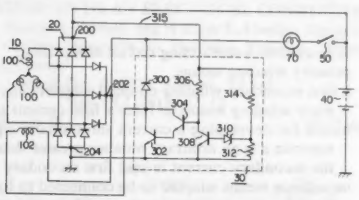
a frequency converter including controlled semiconductor switching elements;

a synchronous motor driven by the frequency converter;
phase voltage detecting means for detecting the phase voltage of the synchronous motor;
speed detecting means for detecting the speed of the synchronous motor;
a wave forming circuit for forming the waveform of the detected phase voltage by applying the output of the speed detecting means thereto, said wave forming circuit including an operational amplifier coupled to receive the detected phase voltage output of said phase voltage detecting means and a divider having two inputs, one of said two inputs being connected to the output of the operational amplifier and the other of said two inputs being connected to an output of the speed detecting means, said wave forming circuit producing an output voltage that is of constant amplitude regardless of the value of the phase voltage and regardless of the value of speed detected by the speed detecting means, said wave forming circuit operating such that phase lag is constant regardless of input frequency values;
a logic signal converter for producing logic signals from the output of the wave forming circuit; and gate-pulse generating means responsive to said logic signals for producing signals for controlling the controlled semiconductor elements and for operating the commutatorless motor device at a constant margin angle of commutation regardless of load conditions and noise.

4,309,648
CONTROL DEVICE FOR BATTERY CHARGING AC GENERATOR

Mitsuharu Morishita, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 11, 1978, Ser. No. 950,520
Claims priority, application Japan, Oct. 18, 1977, 52/140518[U]
Int. Cl.³ H02J *7/16*
U.S. Cl. 322—28 **4 Claims**

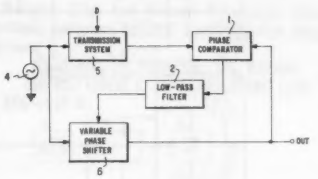


1. A device for charging a battery comprising, in combination:
an AC generator having a field coil;
a full-wave rectifier means connected to the AC output of said AC generator and including a first, a second and a third rectified output terminal, said full-wave rectifier means producing DC outputs between said first and third rectified output terminals and between said second and third rectified output terminals respectively;
means for connecting a storage battery across said first and third rectified output terminals and including a lead connecting said first rectified output terminal to said storage battery;
voltage regulator means operatively coupled to said AC generator for controlling the output voltage therefrom to a predetermined magnitude by sensing said output voltage and controlling the field current flowing through said field coil in response to the sensed voltage, said voltage regulator means having an output transistor means series connected to said field coil between said second and third rectified output terminals;
a starting key switch and a charge indication lamp connected in series between said second rectified output terminal and said storage battery; and
a base current-supply circuit for supplying a base current to said output transistor means and having a base resistor connected directly to said first rectified output terminal.

4,309,649
PHASE SYNCHRONIZER

Michinori Naito, Tokyo, Japan, assignor to Trio Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 15, 1979, Ser. No. 66,771
Claims priority, application Japan, Sep. 7, 1978, 53-109908
Int. Cl.³ G05F *5/00*
U.S. Cl. 323—212 **3 Claims**



1. Circuitry for obtaining a signal which is phase synchronized with respect to another signal which has passed through a transmission system after originating at a signal source, said circuitry comprising
said transmission system wherein the phase of said another signal indeterminately fluctuates due to the transmission system characteristics or the environment thereof;
a variable phase shifter responsive to the output signal of said signal source for shifting the phase thereof in response to a control signal applied thereto;
a phase comparator responsive to the signal which has passed through the transmission system and the output signal of the variable phase shifter to provide an output signal indicative of the phase difference between the two signals applied thereto; and
a low-pass filter responsive to said phase comparator output signal to provide said control signal for the variable phase shifter so that the phase of the output signal of the variable phase shifter follows the phase of the transmission system output signal.

4,309,650
AVERAGE CURRENT CONTROLLED SWITCHING REGULATOR UTILIZING DIGITAL CONTROL TECHNIQUES

Victor B. Boros, New York; James N. Giacopelli, Maspeth, both of N.Y., and Thomas V. Papathomas, Chatham, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 18, 1979, Ser. No. 49,593
Int. Cl.³ H02P *13/32*
U.S. Cl. 323—283 **6 Claims**

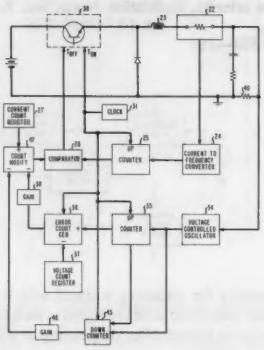
3. A current controlled switching type voltage regulator comprising:
input means, output means, and switching means coupling said input and output means;
clock means for periodically initiating conduction in said switching means;
current sensing means coupled to sense current flow through said switching means;
current-to-signal frequency conversion means responsive to said current sensing means
said current-to-signal frequency conversion means constructed to have an operative characteristic so as to produce a residual signal frequency output when current

sensed by said current sensing means falls below a preset threshold current level,

first counting means responsive to said current-to-signal frequency conversion means to derive a count proportional to an average of the current flow through said switching means;

a voltage-to-signal frequency conversion means coupled to sense a voltage at said output means;

second counting means responsive to said voltage-to-signal frequency conversion means;



a voltage reference count register, subtraction means responsive to said voltage reference count register and said second counting means for generating an error count; and

a current reference count register, count modifying means coupled to modify a count output of said current reference count register in response to said error count and comparator means coupled to compare a count output of said count modifying means with an accumulating count in said first counter whereby conduction in said switching means is terminated in response to a count equality detected by said comparator.

4,309,651

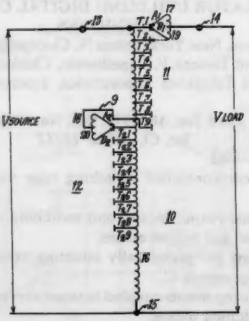
WIDE RANGE VOLTAGE REGULATOR CIRCUIT

Robert H. Brennan, Pittsfield, Mass., assignor to General Electric Company

Filed Aug. 11, 1980, Ser. No. 176,849

Int. Cl.³ G05F 1/14

U.S. Cl. 323—341 **13 Claims**



1. A voltage regulator comprising:

a first series winding arranged around an associated electromagnetic core and connected at one end to a first terminal;

a plurality of first tap windings within said first winding;

a plurality of first stationary contacts connected with each of said first tap windings;

a first movable contact for making contact with each of said first stationary contacts and with a second terminal for varying voltage output at said second terminal;

a second series winding electrically connected with said first series winding;

a plurality of second tap windings within said secondary winding;

a plurality of second stationary contacts connected with said second tap windings;

a second movable contact for making contact with each of said second stationary contacts; and

an exciting winding wound around an associated electromagnetic core and connected with said second series winding and a third terminal, said third terminal providing a common connection between a voltage source and a voltage load.

4,309,652

CURRENT TRANSFORMING CIRCUITS

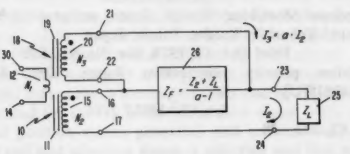
Teruhiko Ito, Yokohama, and Haruo Takahashi, Kawasaki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Mar. 7, 1980, Ser. No. 128,300

Claims priority, application Japan, Mar. 15, 1979, 54-30463; Oct. 8, 1979, 54-129750

Int. Cl.³ H01F 40/06

U.S. Cl. 323—357 **22 Claims**



1. A current transforming circuit comprising:

primary winding means;

a first secondary winding coupled magnetically to said primary winding means to form a first current transformer;

means for developing a current substantially equal to $(a \cdot I_2)$ wherein a is an arbitrary number greater than 1 and I_2 is the secondary current in said first secondary winding;

impedance means adapted to be connected to load means to form a series connection therewith across said first secondary winding, said impedance means having an impedance of approximately $(Z_2+Z_L)/(a-1)$ wherein Z_2 is the leakage impedance of said first secondary winding and Z_L is the impedance of said load means; and

said current developing means being connected to said impedance means such that a current substantially equal to $(I_2-a \cdot I_2)$ flows therethrough to substantially null voltages induced in the first secondary winding due to exciting currents present therein.

4,309,653

ELIMINATION OF LINE IMPEDANCE ERROR IN A THREE-WIRE PROBE INTERFACE

Timothy F. Stack, Enfield, Conn., and Richard W. Calcasola, Longmeadow, Mass., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 25, 1980, Ser. No. 191,035

Int. Cl.³ G01K 7/16

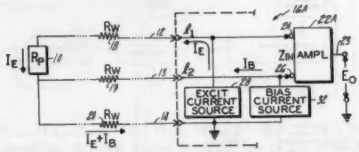
U.S. Cl. 323—369 **5 Claims**

1. Apparatus for providing a signal manifestation of the resistance value of a resistance temperature device (RTD), comprising:

interconnection means having three electrically conductive lines including a source excitation line connected at one end to one side of the RTD, and including a source return line and a sensed signal line each connected at one end to the other side of the RTD;

excitation signal source means, connected with selected polarity between the other ends of said source excitation line and said source return line for providing an excitation current signal therethrough to the RTD;

bias signal source means, connected with said same selected polarity between the other end of said sensed signal line



and said other end of said source return line, for providing a bias current signal therethrough at a magnitude and phase equal to that of said excitation current signal; and

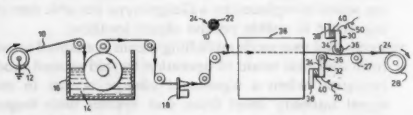
amplifier means, having first and second inputs connected, respectively, to said other ends of said source excitation line and said sensed signal line, for providing as the manifestation of the RTD resistance value an output voltage signal at a magnitude proportional to the difference magnitude between the voltage signals appearing at said first and said second inputs in response to said excitation current signal and said bias current signal.

4,309,654

METHOD AND APPARATUS FOR TESTING MOISTURE CONTENT OF PULP INSULATION DURING APPLICATION ONTO AN ELECTRICAL CONDUCTOR

Michael A. Shannon, Verdun, and William E. Cowley, Montreal, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Oct. 9, 1979, Ser. No. 83,113
Int. Cl.³ G01N *27/12*
U.S. Cl. 324—65 R **10 Claims**



5. Apparatus for testing the moisture content of pulp insulation on a grounded electrical conductor during the application of the insulation onto the conductor, comprising:

a first voltage divider comprising two first resistances connected in series through a first node, one end of said first voltage divider being grounded; first contact means connected to said first node and directly contacting the outer surface of the insulation on the conductor to connect said insulation in parallel with one of the two first resistances; and means for applying a first d.c. potential difference across the first voltage divider;

a second voltage divider comprising two second resistances connected in series through a second node, one end of said second voltage divider being grounded; second contact means connected to said second node and directly contacting the outer surface of the insulation on the conductor to connect said insulation in parallel with one of the two second resistances; and means for applying a second d.c. potential difference across the second voltage divider; and

means for obtaining a measure of the potential at the first node and a measure of the potential at the second node;

said first potential difference and said first two resistances being selected relative to said second potential difference and said second two resistances whereby the components due to the stray charges present in said measures approximately cancel out; and

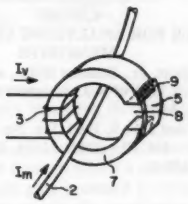
means to obtain the difference between the two measures, said difference being directly proportional to the amount of moisture in the pulp insulation.

4,309,655

MEASURING TRANSFORMER

Heinz Lienhard, Zug, and Gernot Schneider, Baar, both of Switzerland, assignors to LGZ Landis & Gyr Zug AG, Zug, Switzerland

Filed Jun. 23, 1978, Ser. No. 918,446
Int. Cl.³ G01R *1/20, 33/00*; H01F *1/00*
U.S. Cl. 324—117 R **12 Claims**



1. A measuring transformer comprising:

a core of magnetizable material having an air gap;

an anisotropic thin film of magnetizable material positioned at said gap, a surface of said film being parallel to a path of magnetic flux bridging said gap;

a measuring conductor for carrying a current to be measured, said conductor being disposed adjacent said core for magnetic coupling therewith; and

a pre-magnetizing winding for carrying an alternating pre-magnetizing current to induce an alternating varying magnetic field which repetitively saturates the material of said film in both directions of saturation, said winding being disposed adjacent said core for magnetic coupling therewith, whereby the point of time of the saturation of said film is dependent on the strength of said current to be measured.

4,309,656

LEVEL INDICATING CIRCUIT

Taiwa Okanobu, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 3, 1980, Ser. No. 126,383
Claims priority, application Japan, Mar. 5, 1979, 54-25252
Int. Cl.³ G01R *15/00, 1/30*; H04B *17/00*
U.S. Cl. 324—131 **10 Claims**

1. A circuit for applying to a level indicator a signal indicative of the magnitude of an input signal comprising:

a first transistor and a second transistor each having first and second current-carrying electrodes and a control electrode;

first and second resistors respectively connecting the first current-carrying electrodes of said first and second transistors to a first voltage point;

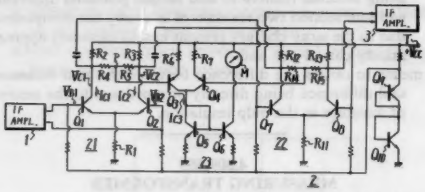
means connecting the second current-carrying electrodes of said first and second transistors to a second voltage point;

means for applying an input signal to the control electrodes of said first and second transistors;

level-sensing circuit means for supplying to said level indica-

tor an indicating signal whose level is related to the magnitude of the input signal; and

means connecting the first current-carrying electrode of said first transistor to said level-sensing circuit means and



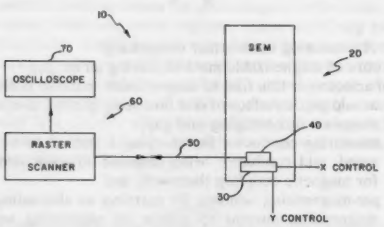
establishing a threshold for said input signal such that the level-sensing circuit means supplies said indicating signal to said level indicator only when the magnitude of said input signal exceeds said threshold.

4,309,657

APPARATUS FOR ANALYZING SEMICONDUCTOR MEMORIES

James A. Lockhart, Jr., Basking Ridge, and Shung-huei Chang, Highland Park, both of N.J., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jan. 9, 1980, Ser. No. 110,707
Int. Cl.³ G01R *31/22, 31/02*
U.S. Cl. 324—158 R 1 Claim



1. The method of physically locating and optically examining faulty cells in a semiconductor device by means of a scanning electron microscope comprising the steps of

positioning a semiconductor module, including a matrix of cells, at a first viewing position in a scanning electron microscope,

electrically scanning and addressing and charging each cell in the semiconductor module and displaying on an oscilloscope the scanned raster of cells and a first faulty cell therein,

inducing a fault in a second cell in said module by means of the electron beam of said scanning electron microscope,

electrically scanning and addressing each cell in said module and displaying said first and second faulty cells on the oscilloscope,

mechanically moving said module in said microscope to a second position which tends to place the point of impingement of the electron beam of said microscope either on or closer to the location of said first faulty cell and inducing a fault in a third cell,

electrically scanning and addressing each cell in the semiconductor module and displaying on an oscilloscope the scanned raster and said first and third faulty cells therein,

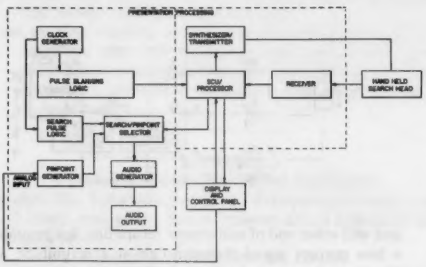
whereby, if said first and third faulty cells coincide in position or are suitably close together as shown by the raster scan on said oscilloscope, then the operator of the microscope can visually inspect the first faulty cell to determine the reason for its being faulty.

4,309,658

PORTABLE, BURIED OBJECT DETECTION SYSTEM WITH IMPROVED SIGNAL PROCESSING AND PRESENTATION

Abram Leff, 6814 Crossman St., Annandale, Va. 22003

Filed Sep. 14, 1979, Ser. No. 75,442
Int. Cl.³ G01V *3/165*
U.S. Cl. 324—327 1 Claim



1. An improved object detection device of the sweep search head/transceiver system variety with audio output means adapted to produce a clicking sound with the occurrence of each pulse output of the system, wherein connecting means are provided for connection of said system to said audio output means, wherein the frequency rate of the pulse output of the system increases as the search head approaches the object and wherein the improvement comprises:

clock generator means for producing a pulse output signal with a selected frequency rate in the audio frequency range for producing the clicking sound, and adapted to be coincident in time with the time required for one sweep of the search head so as to enable a user to pace his sweep;

said connecting means includes a two mode switching means, said switching means adapted to connect only the output of said clock generator means to said audio output means in a first mode of operation, the object search mode, and to connect only the output of said search head/transceiver system to said audio output means in a second mode of operation, the object pinpointing mode, wherein in said second mode a constant rate pacing clicking sound is replaced by a Geiger-type variable rate clicking sound to enable precise object location;

wherein said two mode switching means is adapted to switch from said first mode of operation to said second mode of operation when a significant change occurs in output signal intensity level from said system with respect a reference signal intensity level, wherein said significant change is caused by the detection of an object and;

wherein said two mode switching means is adapted to switch when said significant change is a selected signal intensity level from said system developed from a selected number of the currentmost sweeps of the search head.

4,309,659

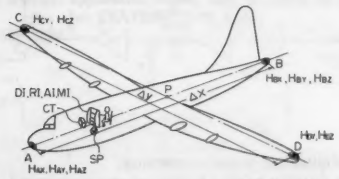
METHOD FOR DETECTING A MAGNETIC SOURCE BY MEASURING THE MAGNETIC FIELD THEREABOUT

Tanekage Yoshii, No. 1-6-4, Ikego, Zushi-shi, Kanagawa-ken, Japan

Filed Oct. 11, 1979, Ser. No. 83,641
Claims priority, application Japan, Oct. 28, 1978, 53-133087
Int. Cl.³ G01V *3/40, 3/165*
U.S. Cl. 324—345 5 Claims

1. A method of detecting the position of a magnetic source relative to a measuring point (P) and associated magnetic moments by measuring total source generated field strength

and field strength gradients at said measuring point, including the steps of: establishing two measuring locations (A and B) symmetrically displaced from the measuring point along a first axis (X); establishing at least a third measuring location (C) displaced from the measuring point along a second axis (Y) perpendicular to and intersecting the first axis at the measuring point; mesuring three directional components of the field



strength (H_{Ax}, H_{Ay}, H_{Az}; H_{Bx}, H_{By}, H_{Bz}) at each of said two measuring locations defined by the intersection of the first axis and two other mutually perpendicular intersecting axes respectively parallel to the second axis and a third axis (Z); and measuring two directional components of the field strength (H_{Cy}, C_{Cz}) at said third measuring location along the second axis and a perpendicular intersecting axis parallel to the third axis.

4,309,660

METHODS AND APPARATUS FOR MEASURING ELECTRICAL CONDUCTIVITY

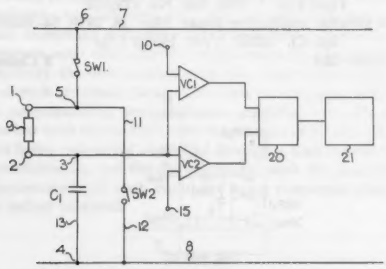
Stuart J. Stephen, Auckland, New Zealand, assignor to AHI Operations, Limited, Manukau City, Auckland, New Zealand

Continuation of Ser. No. 000,982, Jan. 4, 1979, abandoned. This application Nov. 10, 1980, Ser. No. 205,240

Claims priority, application New Zealand, Nov. 2, 1978, 188810

Int. Cl.³ G01N *27/42*

U.S. Cl. 324—442 **3 Claims**



1. Apparatus for use in a device for indicating the electrical conductivity of liquid in an electrical conductivity cell having a pair of terminals, said apparatus comprising:

an oscillator having a resistance-capacitance network which includes said cell;

a capacitor;

an electronic device which has different conducting states in response to application of high potential and low potential, respectively, being applied thereto;

a reference conductance;

an electrical potential source;

means for applying a potential from said source to the terminals of said cell by applying the potential to said capacitor, said cell, and said reference conductance such that current is cyclically reversed in said cell;

whereby the time period of the cyclical reversal of current in said cell is an indication of the conductivity of the liquid in the cell in terms of the conductivity of the reference conductance.

4,309,661

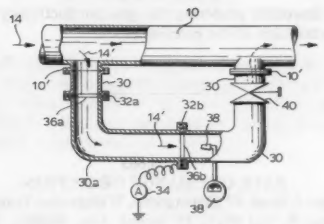
DEVICE FOR MEASURING QUANTITY OF ELECTRIC CHARGES ON ELECTRIFIED FLUID

Satoru Kamoto, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 9, 1979, Ser. No. 82,590

Int. Cl.³ G01N *27/60*; G01R *29/12*; H05F *1/00*

U.S. Cl. 324—453 **8 Claims**



1. A device for measuring the quantity of electric charge carried by an electrically insulating fluid flowing in a main pipe, comprising:

a bypass pipe which is connected in parallel with a section of said main pipe and through which a portion of said fluid flowing in said main pipe is caused to flow, said bypass pipe comprising an electrically conductive pipe section electrically insulated from said main pipe;

electrical conductor means connected to said conductive pipe section for electrically connecting said conductive pipe section to ground;

current measuring means connected to said electrical conductor means for measuring the magnitude of electric current flowing in said conductor means;

and flow measuring means disposed in said bypass pipe for measuring flow rate of said portion of the fluid flowing in said bypass pipe; and

flow control means in said bypass pipe for controlling the flow rate of the fluid therethrough;

said conductive pipe section having sufficient length for the electric charge carried by said portion of fluid flowing in said conductive pipe section at the flow rate as controlled by said flow control means to be absorbed by said conductive pipe section and grounded through said conductor means.

4,309,662

CIRCUIT FOR RAPIDLY RESYNCHRONIZING A CLOCK

Jean-Pierre Baudoux, Paris, France, assignor to Telecommunications Radioelectriques et Telephoniques T.R.T., New York, N.Y.

Filed Feb. 1, 1980, Ser. No. 117,719

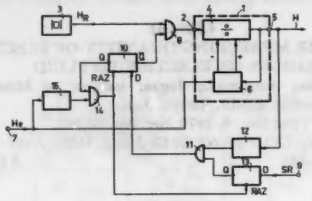
Claims priority, application France, Feb. 5, 1979, 79 02902

Int. Cl.³ H03K *5/26*; H03L *7/06*

U.S. Cl. 328—73 **2 Claims**

1. A circuit for rapidly resynchronizing a clock with an external clock, the generator of the clock to be synchronized comprising a phase-locked loop supplying the desired clock signal by dividing the frequency of a reference clock signal in a frequency divider, the division factor of which is controlled by a phase comparator which detects the deviation between the characteristic transitions of the two clock signals to be synchronized, characterized in that the reference clock pulses are applied to the phase-locked loop by a gate, and that means are provided for rendering this gate nonconductive by the

characteristic transition of the clock to be synchronized which follows the appearance of a resynchronizing control signal,



and for thereafter rendering this gate conductive by a characteristic transition of the external clock.

4,309,663

RATE OF CHANGE DETECTION

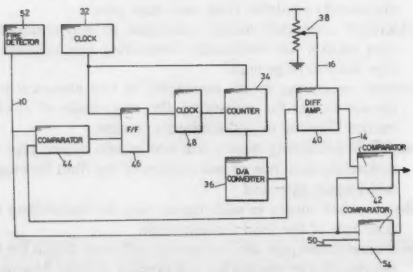
Bernardus J. Bout, 47 Blignautsrus, Walkerville, Transvaal, and Jacobus P. Van Wyk, 25 Second Ave., Florida, Transvaal, both of South Africa

Filed Apr. 30, 1979, Ser. No. 34,809

Claims priority, application South Africa, May 1, 1978, 78/2493

Int. Cl.[3] G01R *19/00;* H03K *5/00*

U.S. Cl. 328—132 **3 Claims**



1. Apparatus for monitoring the rate of change of a first signal which comprises:

means for periodically sampling the amplitude of the first signal to produce a sampled signal,

means responsive to the sampled signal for generating a reference signal which for each sample period differs from the sampled amplitude of the sampled signal by a predetermined amount,

means for comparing the amplitudes of the first signal and the reference signal and to generate an output signal when the amplitude of the first signal crosses the amplitude of the reference signal,

said sampling means comprising clock means which produces pulses at a fixed rate, counter means which counts the pulses produced by the clock means, means to convert the count in the counter means into an analogue signal, said analogue signal being said sampled signal, and means to compare the sampled signal to the first signal and to generate a signal which suspends operation of the counter means when the sampled signal and the first signal are in a predetermined relationship to one another, thereby causing the sampled signal to be held constant for the sample period.

4,309,664

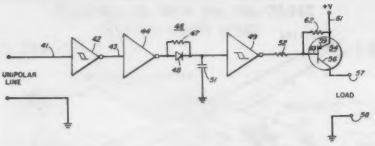
DIGITAL ENERGY LINE SENSOR

David M. Fellows, Cambridge, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Nov. 13, 1979, Ser. No. 93,428

Int. Cl.[3] H03K *5/00*

U.S. Cl. 328—140 **2 Claims**



1. A digital line sensor comprising:

a first Schmitt trigger having an input adapted to receive transmission of unipolar pulses, and adapted to provide an inverted output therefrom;

an inverter coupled to invert said inverted output of said first Schmitt trigger;

a second Schmitt trigger having an input and an output; and

an analog integrator for coupling the output of said inverter to the input of said second Schmitt trigger.

4,309,665

COMPLEMENTARY AMPLIFIER CIRCUIT

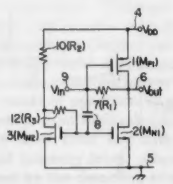
Osamu Yamashiro, Ohmiya, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 7, 1980, Ser. No. 119,510

Claims priority, application Japan, Mar. 28, 1979, 54-35469

Int. Cl.[3] H03F *3/185;* H03B *5/36*

U.S. Cl. 330—264 **8 Claims**



1. A complementary amplifier circuit comprising: first and second potential sources; a first FET of a first conductivity having a gate connected to an input terminal, a source connected to said first potential source and a drain; a second FET of a second conductivity type having a gate, a source connected to said second potential source and a drain; first connecting means connected between the drains of said first and said second FETs; bias resistive means connected between the gate and the drain of said first FET; a capacitor connected between the gates of said first and second FETs; a third FET of said second conductivity type having a gate connected to the gate of said second FET, a source connected to the source of said second FET and a drain; second connecting means connected between the drain and the gate of said third FET; and load means connected between said first potential source and the drain of the third FET.

4,309,666

SEMICONDUCTOR AMPLIFIER

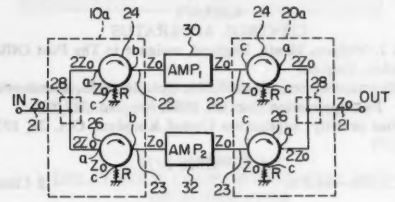
Toshimasa Ito, and Jiro Aiba, both of Funabashi, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 907,908, May 22, 1978, abandoned, which is a continuation-in-part of Ser. No. 716,636, Aug. 23, 1976, abandoned. This application Aug. 17, 1978, Ser. No. 934,498

Claims priority, application Japan, Aug. 26, 1975, 50-103137

Int. Cl.³ H03F *3/19, 3/60*

U.S. Cl. 330—286 2 Claims



1. A semiconductor amplifier comprising an input terminal connected to an input line having a characteristic impedance Z_0, an output terminal connected to an output line having a characteristic impedance Z_0, n number of semiconductor amplifier units the input of each being connected to said input terminal through a power divider and the output of each semiconductor amplifier unit being connected to the output terminal through a power combiner, wherein that said power divider comprises n number of circulators each having three terminals with characteristic impedances nZ_0, Z_0 and Z_0 respectively, the first terminal with the characteristic impedance nZ_0 of each circulator being connected directly to said input terminal, the second terminal with the characteristic impedance Z_0 of each circulator being connected to ground through a load resistor having a resistance Z_0, and the third terminal with the characteristic impedance Z_0 of each circulator being connected to the input terminal of the corresponding semiconductor amplifier unit, and wherein said power combiner comprises n number of circulators each having three terminals with characteristic impedances Z_0, Z_0 and nZ_0 respectively, the first terminal with the characteristic impedance Z_0 of each circulator being connected to the output terminal of the corresponding semiconductor amplifier unit, the second terminal with the characteristic impedance of Z_0 of each circulator being connected to ground through a load resistor having a resistance Z_0, and the third terminal with the characteristic impedance nZ_0 of each circulator being connected directly to the output terminal.

4,309,667

MULTIPLE LASER HAVING A DISTRIBUTED RESONATOR

Marie A. Di Forte; Michel Papuchon, and Claude Puech, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Feb. 13, 1979, Ser. No. 11,926

Claims priority, application France, Feb. 17, 1978, 78 04529

Int. Cl.³ H01S *3/19*

U.S. Cl. 331—94.5 H 9 Claims

1. A multiple laser having a distributed resonator comprising:

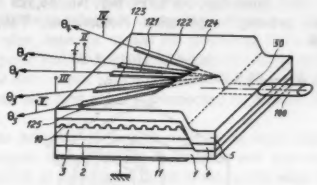
a semiconductor junction formed between lower and upper layers of different conductivity type materials coated on a substrate;

said upper layer being an active layer having at least one region wherein pairs of holes and electrons give rise to photon emission;

an etched grating arranged on top of said active layer for selecting a radiated mode; and

electrode means arranged for causing a current to electrically excite selected portions of said semiconductor junction;

said selected portions being bands of said junction arranged in directions at specified angles with grooves of said grating said bands being convergent at the level of an exit pupil, each of said bands being electrically excited by said current bringing about a laser emission of a specified wavelength in the spontaneous emission band of the semiconductor constituting said active layer.



4,309,668

STRIPE-GEOMETRY DOUBLE HETEROJUNCTION LASER DEVICE

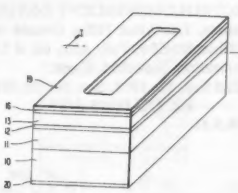
Masayasu Ueno; Hiroo Yonezu, and Roy Lang, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Feb. 21, 1979, Ser. No. 14,012

Claims priority, application Japan, Feb. 20, 1978, 53-18882; Mar. 7, 1978, 53-26355; Mar. 7, 1978, 53-26356

Int. Cl.³ H01S *3/19*

U.S. Cl. 331—94.5 H 18 Claims



1. A stripe-geometry heterostructure semiconductor laser comprising:

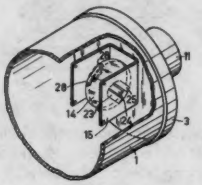
first and second ohmic contacts,

a multilayer active medium including a first epitaxial layer of $Al_xGa_{1-x}As$, a second epitaxial layer of $Al_yGa_{1-y}As$, $0 \leqq y \leqq x$, thereby forming a first heterojunction at the interface therebetween, and a third epitaxial layer of Al_z-$Ga_{1-z}As$, $z > y$, thereby forming a second heterojunction at the interface between said $Al_zGa_{1-z}As$ layer and said $Al_yGa_{1-y}As$ layer, said medium having a pair of spaced parallel reflective surfaces forming a pair of mirrors of an optical resonator, said second layer including a first region extending between said reflective surfaces in a stripe-like manner with the ends thereof spaced apart from said reflective surfaces, and a second region contiguous to said first region and extending between said reflective surfaces and having a predetermined band gap, said first region having a band gap narrower than that of said second region, said third layer including a third region extending between said reflective surfaces so as to overlay said first region, the width of said third region being wider than that of said second region, said third region being adapted to inject carriers into said second layer.

4,309,669
GAS DISCHARGE LASER

Pieter C. Bloot, and Johannes H. K. C. van Kleef, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 30, 1979, Ser. No. 34,523
Claims priority, application Netherlands, Feb. 12, 1979, 7901068
Int. Cl.³ H01S 3/08
U.S. Cl. 331—94.5 D 13 Claims

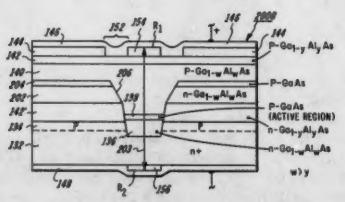


1. A gas discharge laser comprising a tubular glass envelope containing a gas including an active lasing medium and a laser capillary having a longitudinal axis, which envelope comprises two electrodes for establishing an electric discharge in the gas and at each end a reflector having an optical axis, the optical axes of said reflectors being coincident with the axis of the laser capillary, said reflectors together with the laser capillary constituting a resonant cavity, a Brewster window mounted in a holder in said envelope located in front of one of the reflectors, the holder being made of metal sheet material formed so that one major surface of the Brewster window is resiliently urged against three regions of engagement on the holder.

4,309,670
TRANSVERSE LIGHT EMITTING ELECTROLUMINESCENT DEVICES

Robert D. Burnham, Los Altos Hills; Donald R. Scifres, Los Altos, and William Streifer, Palo Alto, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 13, 1979, Ser. No. 75,381
Int. Cl.³ H01S 3/19
U.S. Cl. 331—94.5 H 21 Claims



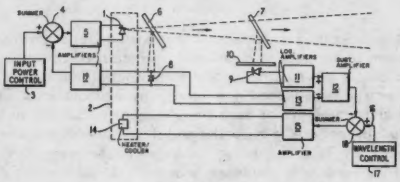
1. In a transverse radiation emitting semiconductor electroluminescent device wherein optical wave propagation is in a direction transverse to the planar deposition of a plurality of contiguous semiconductor layers comprising said device, one of said layers forming an active layer and having an active region with a p-n junction thereat, means to establish a transverse optical cavity for supporting optical wave propagation under lasing conditions in a direction transverse to the planar extent of said active layer when a current is applied across said junction, the emission of radiation from said device being from at least one end surface thereof transverse to the planar extent of said layers and at one end of said transverse optical cavity, current confinement means in said device to aid in the confinement of current to said active region, said device characterized by

transverse waveguide confinement means surrounding at least a portion of said transverse optical cavity and extending in a direction parallel to said cavity through and beyond the lateral boundaries of said active region, the semiconductor compositional materials comprising said waveguide confinement means having a bandgap and refractive index, respectively, wider and lower than the material comprising said active region.

4,309,671
CONTROL APPARATUS

Derek J. Malyon, Heath, England, assignor to The Post Office, London, England

Continuation of Ser. No. 954,114, Oct. 24, 1978, abandoned.
This application Dec. 18, 1980, Ser. No. 217,807
Claims priority, application United Kingdom, Oct. 26, 1977, 44572/77
Int. Cl.³ H01S 3/13
U.S. Cl. 331—94.5 S 8 Claims



1. In combination: a semiconductor laser; and apparatus for controlling the intensity and wavelength of light emitted by said laser, said wavelength being determined by an operating parameter of said laser; said apparatus comprising:

means to supply drive current to said laser to cause said laser to emit light;

a first photodiode to receive light emitted by said laser and to produce a first electrical output signal in dependence upon the intensity of said emitted light received thereby;

current control means responsive to said first electrical output signal and coupled to said drive current supply means to control said drive current supplied to said laser to maintain said intensity of said emitted light substantially constant;

emission-responsive means, comprising a second photodiode and a wavelength-dependent filter interposed between said second photodiode and said laser, to receive light emitted by said laser and to produce a second electrical output signal which varies in dependence upon said wavelength of said emitted light received thereby;

and means responsive to said second output signal to control said parameter of said laser to maintain said wavelength substantially constant.

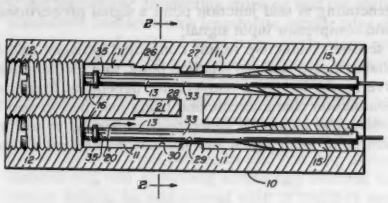
4,309,672
NEGATIVE RESISTANCE OSCILLATOR/AMPLIFIER ACCUMULATOR CIRCUIT

Richard C. Havens, Scottsdale, Ariz., assignor to Ad-Tech Microwave, Inc., Scottsdale, Ariz.

Filed Feb. 11, 1980, Ser. No. 120,376
Int. Cl.³ H03B 7/14
U.S. Cl. 331—96 8 Claims

1. In a cavity oscillator/amplifier comprised of a resonant cavity coupled to at least one TEM transmission line, said line having a negative resistance device coupled at one end as a

source of r.f. energy and a dissipative load element at an opposite end, the improvement comprising:



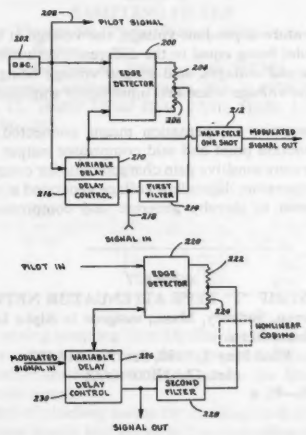
means for maintaining a uniform characteristic impedance along the length of said TEM transmission line.

4,309,673

DELAY LOCK LOOP MODULATOR AND DEMODULATOR

Gayle R. Norberg, Columbia Heights, and Dennis M. Petrich, Wayzata, both of Minn., assignors to Control Data Corporation, Minneapolis, Minn.

Filed Mar. 10, 1980, Ser. No. 129,056
Int. Cl.³ H03C *3/00*; H03D *3/00*
U.S. Cl. 332—16 R **3 Claims**



1. In combination; a modulator, a demodulator and means providing for transmission from the modulator to the demodulator, and

wherein said modulator is comprised of:

an oscillator which provides a pilot signal which is transmitted to said demodulator,

a pulse edge detector means for detecting the edge of an input pulse and having a first and second input and having at least one output which is indicative of a pulse edge, and wherein said first input is connected to said oscillator,

a variable delay device which receives an input signal from said oscillator and has an output connected to the second input of said pulse edge detector means, said device having the characteristic of varying the delay time of signal transmission therethrough in response to a control signal,

control means for said variable delay device and connected thereto and having an input for receiving an input signal to which it is responsive,

a filter having a first filter characteristic connected with the output of said edge detector means and having an output connected to said control means, and

wherein the signal to be modulated is added to the input signal to said control means from said filter and

a half cycle one shot flip-flop means connected with the output of said variable delay device and having as its output the output signal of said modulator, and

wherein said demodulator is comprised of:

a pulse edge detector means for detecting the edge of an input pulse and having a first and second input and having at least one output which is indicative of a pulse edge and wherein said first input is connected to receive said pilot signal,

a variable delay device which receives an input signal from the output signal of said modulator and has an output connected to the second input of said pulse edge detector means, said device having the characteristic of varying the delay time of signal transmission therethrough in response to a control signal,

control means for said variable delay device and connected thereto and having an input for receiving an input signal to which it is responsive,

a filter having a second filter characteristic different from said first filter characteristic connected with the output of said edge detector means and having an output connected to said control means, and

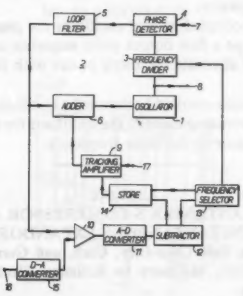
wherein the output of said filter comprises the demodulated output signal.

4,309,674

FREQUENCY MODULATORS WITH COMPENSATION FOR VARIATIONS IN MODULATION SENSITIVITY

David P. Owen, Dunstable, England, assignor to Marconi Instruments Limited, Chelmsford, England

Filed Aug. 31, 1979, Ser. No. 71,573
Claims priority, application United Kingdom, Sep. 2, 1978, 35423/78; Dec. 13, 1978, 48337/78; Mar. 14, 1979, 09034/79
Int. Cl.³ H03C *3/08*
U.S. Cl. 332—18 **6 Claims**



3. A method of producing a frequency modulated signal by controlling the output of a variable frequency oscillator within an operating frequency range thereof, which comprises the steps of

(a) measuring the frequency modulation sensitivity of the oscillator over said operating frequency range;

(b) storing a signal indicative of said frequency modulation sensitivity over said operating frequency range;

(c) generating a frequency modulated signal by controlling the output of said variable frequency oscillator within said operating frequency range in accord with a modulating signal modified by said stored signal so as to compensate for non-linearity in the modulation sensitivity; and

(d) repeating steps (a) and (b) during times other than during step (c) whereby frequency modulation sensitivity of said oscillator is repetitively updated.

4,309,675
CONTROL CIRCUIT FOR PROVIDING A SYNCHRONIZED DRIVE SIGNAL TO AN OSCILLATING SYSTEM

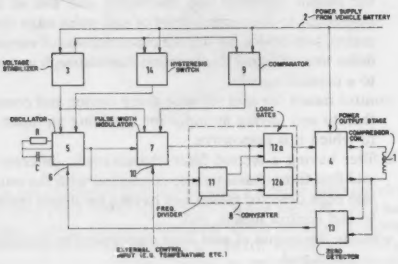
Erich Rabe, Nuremberg, Fed. Rep. of Germany, assignor to Siegas-Metallwarenfabrik Wilhelm Loh GmbH & Co. KG, Siegen, Fed. Rep. of Germany

Filed Oct. 30, 1979, Ser. No. 89,289

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1978, 2847208

Int. Cl.³ H03L *1/00*

U.S. Cl. 331—172 **13 Claims**



1. A control circuit, for controlling an oscillating system capable of oscillating at a basic frequency, said control circuit having an electrical oscillation generator capable of being synchronized to the oscillating system, and a power stage controlled by the oscillation generator for supplying operating power to the oscillating system, wherein said generator comprises:

an oscillator which includes an input for receiving an external synchronizing signal and which generates an oscillator pulse sequence at an oscillator frequency corresponding to twice the basic frequency and synchronized with said basic frequency;

a converter coupled to said oscillator for providing to said power stage a first output pulse sequence comprised of a first set of alternate oscillator pulses with the same polarity; and

feedback means coupled between the oscillating system and the synchronizing input of the oscillator for synchronizing said oscillator to the basic frequency.

4,309,676
INSTANTANEOUS COMPRESSOR AND INSTANTANEOUS EXPANDOR

Hubert Martin, Salt Lake City, Utah, and Gerald W. Beene, Arlington, Tex., assignors to Reliance Electric Company, Bedford, Tex.

Filed Sep. 10, 1980, Ser. No. 185,892

Int. Cl.³ H04B *1/64*

U.S. Cl. 333—14 **32 Claims**

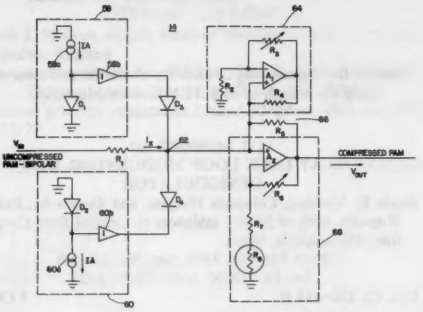
1. A compressor having an input and an output and a junction point intermediate there between for compressing in accordance with a predetermined logarithmic encoding characteristic a variable amplitude analog input signal to thereby generate at said output a temperature independent compressed analog signal which substantially follows said encoding characteristic comprising:

(a) first source means for generating independent of said input signal amplitude a constant amplitude first current and including a first conductive means having a temperature dependent logarithmic conduction characteristic for generating in response to said first current a first temperature dependent voltage;

(b) first circuit means connected to said junction point for generating a second current which is equal in magnitude to said first current when said input signal amplitude is zero;

(c) means connected between said input and said junction for generating at said junction point a signal proportional to said compressor input signal;

(d) second conductive means connected between said first source means and said junction point, said second conductive means having a temperature dependent logarithmic conduction characteristic and being matched to said first conductive means for generating in response to said junction point input signal and said second current a second



temperature dependent voltage, the voltage at said junction point being equal to the difference between said first and second voltages, said second voltage being equal to said first voltage when said input signal amplitude is zero; and

(e) temperature compensation means connected between said junction point and said compressor output having a temperature sensitive gain characteristic for compensating the temperature dependent voltage generated at said junction point to thereby generate said compressor output signal.

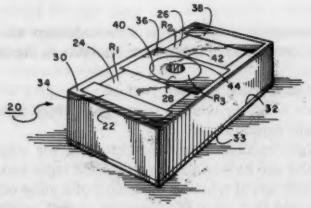
4,309,677
MICROSTRIP "T" TYPE ATTENUATOR NETWORK

Mark Goldman, Sudbury, Mass., assignor to Alpha Industries, Inc., Woburn, Mass.

Filed May 5, 1980, Ser. No. 146,622

Int. Cl.³ H01P *1/22*

U.S. Cl. 333—81 A **3 Claims**



1. Microwave attenuating apparatus comprising,

a dielectric substrate having a top surface and a bottom surface each generally rectangular and characterized by length and width and separated by the substrate thickness,

grounding conducting material substantially covering said bottom substrate surface,

first, second and third spaced strips of resistive material deposited on said top surface,

at least said first and second resistive strips being generally parallel to each other with the length of each of said first

and second resistive strips extending along most of the width of said top surface,

said third resistive strip being between said first and second resistive strips,

first and second end conducting strips on said top surface in conductive contact with a lengthwise outside edge of said first and second resistive strips respectively along most of the width of said top surface and adjacent to respective opposed widthwise edges of said top surface,

and conducting material interconnecting said first, second and third strips of resistive material and said grounding conducting material to establish a predetermined attenuation between an input defined by said first strip of resistive material and said grounding conducting material and an output defined by said second strip of resistive material and said grounding conducting material,

said conducting material including an intermediate conducting strip having first and second edges in conductive contact with a lengthwise inside edge of said first and second resistive strips respectively,

and at least one transverse conducting strip in conductive contact with an edge of said third resistive strip and said grounding conducting material of length substantially equal to the substrate thickness,

said transverse conducting strip surrounding an opening in said substrate surrounded at the top by said third resistive strip.

4,309,678

SAMPLING FILTER

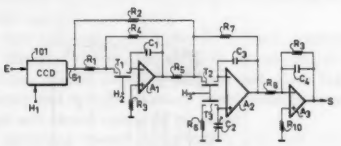
Jean-Edgar Picquendar, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jan. 30, 1980, Ser. No. 117,021

Claims priority, application France, Feb. 2, 1979, 79 02765

Int. Cl.³ H03H *17/06;* **G11C** *27/02;* **H03K** *5/156*

U.S. Cl. 333—165 **3 Claims**



1. In an analog sampling filter for filtering a stair-case signal from a charge-coupled device, the improvement comprising:

a first order analog interpolating means for filtering said stair-case signal;

a plurality of clocking means for dividing each step of said stair-case signals into segments for controlling the output of said charge-coupled device in coordination with the switching of said interpolation means to provide an output signal corresponding to said stair-case signals whose out-of band signals have been minimized.

4,309,679

SURFACE ACOUSTIC WAVE FILTER

Nobuaki Furuya; Yoshihiro Kino, and Hiroshi Miyama, all of Kawasaki, Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Dec. 3, 1979, Ser. No. 99,639

Claims priority, application Japan, Dec. 4, 1978, 53-150218

Int. Cl.³ H03H *9/64, 9/72*

U.S. Cl. 333—195 **12 Claims**

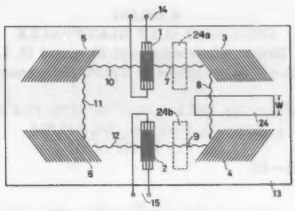
1. A surface acoustic wave filter comprising:

(a) a substrate made of $LiNbO_3$;

(b) a first converter comprising electrodes arranged in an interdigitated grating pattern for converting an electrical signal into a pair of surface acoustic waves which propagate along the surface of said substrate;

(c) a pair of reflecting means respectively provided in the propagation lines of said pair of surface acoustic waves;

(c) a second converter comprising electrodes arranged in an interdigitated grating pattern for converting a pair of surface acoustic waves respectively propagated from said pair of reflecting means via first and second transmission lines, into an electrical signal; wherein the improvement comprises:



means for matching the phase of said pair of reflected surface acoustic waves received by said second converter, with each other, which adjusts the time of arrival of said pair of surface acoustic waves at said second converter, said phase matching means including a thin strip made of SiO_2 and, disposed on the surface of said substrate, said strip being placed in one of said first and second transmission lines, the propagation velocity of a surface acoustic wave along said strip being different from that along the surface of said substrate.

4,309,680

ELECTRO-MECHANICAL FILTER INCLUDING MECHANICAL RESONATOR

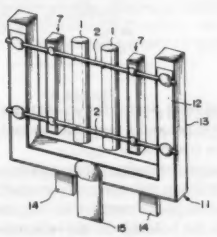
Koji Suzuki, Kawagoe, Japan, assignor to Nippon Bearing Company Limited, Ojiya, Japan

Filed Jun. 25, 1979, Ser. No. 51,704

Claims priority, application Japan, Jul. 7, 1978, 53-93474[U]

Int. Cl.³ H01Q *9/50*

U.S. Cl. 333—197 **4 Claims**



1. An electromechanical filter comprising:

exciter means composed of two or more transducers for exciting a mechanical vibration;

resonator means composed of one or more mechanical resonators for resonating with the exciter means;

coupler means composed of one or more mechanical couplers for mechanically coupling the exciter means and the resonator means with each other, the mechanical couplers being disposed to extend across the exciter means and the resonator means almost perpendicularly and secured to the both means;

in which the transducers are each formed with a thin bar-shaped piezoelectric ceramic having a pair of thin surface layers formed onto its opposing surfaces and being polarized by having a voltage placed across the electrodes,

and wherein both ends of each of the couplers is extended outwardly, and wherein there is provided support means for fixedly supporting the extended both end portions of the coupler on surfaces of two vertical arms extending almost perpendicularly to the coupler, the support means having at least one horizontal arm for interconnecting the two vertical arms and providing both mechanical support and electrical termination.

4,309,681

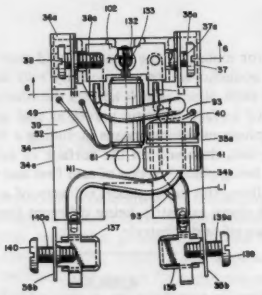
GROUND FAULT RECEPTACLE

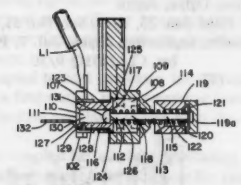
Charles W. Draper, Clearwater, and Raymond H. Legatti, Belleair, both of Fla., assignors to Square D Company, Palatine, Ill.

Division of Ser. No. 806,564, Jun. 14, 1977. This application Mar. 31, 1980, Ser. No. 135,594

Int. Cl.³ H01H *83/02*

U.S. Cl. 335—18 **9 Claims**





1. A trip and reset device for an electrical receptacle having a stationary contact and a movable contact aligned for electrical connection comprising:

(a) a first support member having an outer side and an inner side for holding the stationary contact;

(b) a second support member having an outer side and an inner side for holding the movable contact positioned for reciprocal movement with the stationary contact and for selected electrical connection therewith;

(c) means for maintaining alignment of the contacts;

(d) a first biasing means opposing movement of the second support toward the first support member;

(e) a connecting member having a body portion transversing the first support member, a first end extending laterally from the outer side of the first support member, and a second end received by and operatively connected to the second support member;

(f) a second biasing means for opposing the action of the first biasing means thereby to maintain a selected distance between the support members when the first and second biasing means are at equilibrium and for opposing the transverse inward movement of the connecting member relative to the first support member;

(g) means for depressing the connecting member inwardly of the first support member;

(h) means for increasing the force exerted by the second biasing means and for connecting the second end of the connecting member to the second support member when the depressing means moves the connecting member inwardly a selected distance, thereupon removal of the depressing means causes the second support member to move towards the first support member for electrical connection between the contacts resulting from the increased force exerted by the second biasing means;

(i) stop means for preventing movement of the second support member away from the first support member when the depressing means moves the connecting member inwardly thereby increasing the opposition of the second biasing means to the action of the first biasing means; and

(j) means for disconnecting the second end of the connecting member from the second support member thereby reducing the force exerted by the second biasing means and resulting in the selected distance between the support members when the first and second biasing means are restored to equilibrium.

4,309,682

CONNECTIONS BETWEEN A MOTOR ASSEMBLY AND A CONTACT UNIT BASE OF AN ELECTROMAGNETIC RELAY

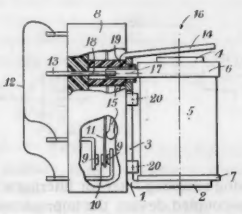
Daniel Arnoux, St.-Germain-en-Laye; Claude Genter; Jean Aguettaz, both of Paris; Alain Berthelot, Conches, and Bernard Michel, Conflans-Ste. Honorine, all of France, assignors to Relais Signalisation Automatisme, Societe Anonyme, Paris, France

Filed Jun. 18, 1980, Ser. No. 160,476

Claims priority, application France, Jun. 19, 1979, 79 15643

Int. Cl.³ H01H *50/04*

U.S. Cl. 335—128 **5 Claims**



1. In an electromagnetic relay comprising a motor assembly, a contact unit and means for attaching together said contact unit and said motor assembly, said contact unit comprising a base of insulating material provided with stationary and movable contacts and with output lugs connected to said stationary and movable contacts, respectively, and with further output lugs, said motor assembly comprising a yoke having two flanges at right angles to each other, a core fixed to the inner face of a first one of said two flanges of said yoke, a coil mounted on said core and having a spool or frame with at least one end flange provided with electrically conducting metal tongues to which the ends of the coil wire are anchored, and a movable armature pivotally mounted to the free end of a second one of said two flanges of said yoke and having bent arms, said base of insulating material being fixed through said attaching means to the outer face of the second flange of said yoke, and said bent arms being operable to actuate said movable contacts when said coil is energized, the improvement consisting in that the metal tongues of the end flange of the frame of the coil are situated on the side of said end flange facing the second flange of the yoke, said tongues extending towards the base beyond said second flange of the yoke and being resiliently engageable with the inner end of said further lugs for

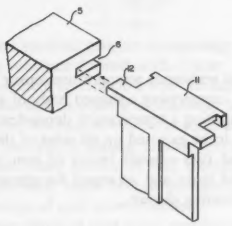
making electric contact therewith when assembling together the motor assembly and the base of the contact unit.

4,309,683

ELECTRIC CONTROL DEVICE

Kurt A. Grunert, Beaver; John J. Dauer, Jr., Brighton Township, Beaver County, and Birch L. DeVault, Beaver, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 5, 1980, Ser. No. 146,889
Int. Cl.³ H01H *67/02*
U.S. Cl. 335—132 **2 Claims**



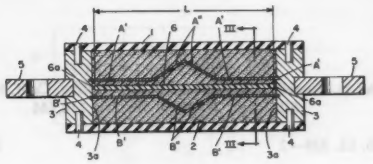
1. An electric control device, comprising:
(a) a base;
(b) a first insulating housing mounted on the base;
(c) a control mechanism supported on the housing;
(d) the control mechanism comprising a first stationary and movable contact combination;
(e) the first stationary and movable contact combination being disposed to open and close an electric circuit;
(f) operating means disposed to open and close the first stationary and movable contact combination between the opened and closed operating positions;
(g) the operating means comprising a coil and armature combination;
(h) the operating means further comprising a first insulating contact-carrying structure mounted generally upon the armature;
(i) the first stationary contact is generally mounted upon the first insulating housing;
(j) the first movable contact is generally mounted upon the first insulating contact-carrying structure whereby upon energization of the coil, the armature is disposed to move the first insulating contact-carrying structure to carry the first movable contact into engagement with the first stationary contact to open and close an electric circuit; and
(h) an auxiliary contact device comprising a second insulating housing mounted generally upon the first insulating housing; a second stationary contact and movable contact combination being disposed generally within the second insulating housing; a second insulating contact-carrying structure whereby the second movable contact is generally mounted thereon; the second insulating contact-carrying structure is disposed to carry the second movable contact into engagement with the second stationary contact to open and close an electric circuit; and connecting means for connecting the first insulating contact-carrying structure to the second insulating contact-carrying structure whereby operating motion of the first insulating contact-carrying structure causes operating motion of the second insulating contact-carrying structure.

4,309,684

ELECTRIC FUSE HAVING LARGE CYCLING ABILITY AND GAS-EVOLVING MEANS

Howard G. Wilks, Amesbury, Mass., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Sep. 22, 1980, Ser. No. 189,520
Int. Cl.³ H01H *85/38*
U.S. Cl. 337—273 **3 Claims**



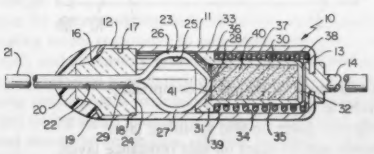
1. An electric fuse comprising a tubular casing of electric insulating material; a pulverulent arc-quenching filler inside said casing; a pair of terminal elements having axially inner end surfaces closing said casing; a pair of fusible elements conductively interconnecting said pair of terminal elements; said pair of fusible elements comprising axially outer, parallel, substantially planar sections; and said pair of fusible elements further comprising axially inner substantially planar converging sections, said axially inner sections converging in opposite directions from the axially inner ends of said axially outer sections and intersect at substantially straight lines, each of said axially outer sections and each of said axially inner sections having points of reduced cross-sectional area arranged at points thereof remote from the intersections of the planes defined by said axially outer sections and the planes defined by said axially inner sections; wherein the improvement comprises a sheet of electric insulating material evolving gas under the action of an electric arc inserted into the gap formed between said pair of fusible elements, said sheet of electric insulating material having a length but slightly shorter than the spacing between said axially inner end surfaces of said pair of terminal elements so as to be substantially prevented from moving relative to said pair of fusible elements in a direction longitudinally of said casing, and said sheet of electric insulating material having a width but slightly less than the inner diameter of said casing so as to be substantially prevented from moving relative to said pair of fusible elements in a direction transversely of said casing.

4,309,685

THERMALLY ACTUATABLE ELECTRICAL SWITCH CONSTRUCTION AND METHOD OF MAKING THE SAME

James T. Candor, Washington Township, Montgomery County, Ohio, assignor to Emerson Electric Company, St. Louis, Mo.

Filed Oct. 22, 1979, Ser. No. 87,047
Int. Cl.³ H01H *37/76*
U.S. Cl. 337—408 **24 Claims**



1. In a thermally actuatable electrical switch construction having a resilient contact member normally biased into electrical contact with a stationary contact member while a temperature sensitive member of said construction is in a solid condition and normally springing out of contact with said stationary contact member by the natural bias of said resilient contact

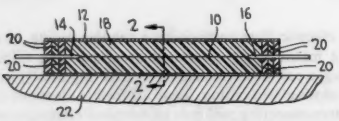
member when said temperature sensitive member is rendered non-solid by sensing a temperature above a predetermined temperature, the improvement comprising guide means carried by said construction and being operatively associated with said resilient contact member to provide a guide for said resilient contact member that will substantially insure that said resilient contact member will move and be maintained out of contact with said stationary contact member after said temperature sensitive member has been rendered non-solid.

4,309,686

CARBON STRAIN GAGE

John D. Russell, 26878 Sea Vista Dr., Malibu, Calif. 90265

Filed Jan. 28, 1980, Ser. No. 116,144
Int. Cl.³ G01L 1/22
U.S. Cl. 338—2 3 Claims



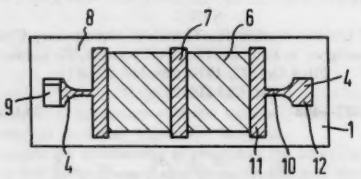
1. In a strain gage having a metallic, tubular strain-deformable housing member, a strain-responsive elongated filament the resistance of which varies in accordance with strains occurring longitudinally thereto, a mass of solid compactable electrical insulating material mechanically coupling said filament within said housing member for deformation in direct proportion to deformation of said housing member, and means connected to said filament capable of monitoring the resistance thereof, wherein said strain-responsive filament comprises a carbon strand.

4,309,687

RESISTANCE STRAIN GAUGE

Ferdinand Utner, and Harald Vetter, both of Regensburg, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 18, 1980, Ser. No. 141,625
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1979, 2916425
Int. Cl.³ G01L 1/22
U.S. Cl. 338—2 6 Claims



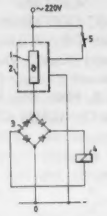
1. A resistance strain gauge comprising:
a synthetic layer;
a resistance layer on said synthetic layer;
terminals spaced apart on said resistance layer;
said terminals formed in a patterned, solderable contact layer carried on and bonded to said resistance layer; and
at least one narrow metal strip bonded to and extending at right angles transversely of said resistance layer intermediate and spaced from said terminals for reducing cross-contraction of said resistance layer.

4,309,688

MEASURING SENSOR

Wolfgang Kempe, Mörfelden-Walldorf, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 3, 1980, Ser. No. 137,009
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1979, 2913279
Int. Cl.³ H01C 3/04
U.S. Cl. 338—25 5 Claims



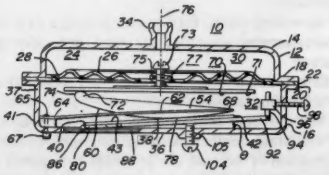
1. An electrical resistance temperature sensor for regulating a heating circuit, comprising a shaped body of a solid electrolyte material exhibiting a temperature dependent conductivity and constructed to be exposed on all sides of the temperature to be sensed, and two contact layers of iron oxide material sintered onto said body and arranged for connection to conductors for the heating circuit.

4,309,689

SIGNAL TRANSDUCING UNIT

Kenneth M. Merz, Gladwyne, and Laurence N. Wesson, Collegeville, both of Pa., assignors to TRW, Inc., Cleveland, Ohio

Filed Dec. 3, 1979, Ser. No. 99,407
Int. Cl.³ H01L 10/10
U.S. Cl. 338—42 29 Claims



1. A signal transducing unit comprising first and second elements movable with respect to each other and each having first and second ends and a conductive path, the conductive paths of the elements electrically contacting each other at a location which is displaced along their paths with the relative movement of the elements, positioning means for retaining the elements for relative movement, actuating means displaceable for moving and positioning the second element with respect to the first element and controlling the contact location of the elements, adjusting means secured with the actuating means for controllably setting the positions of the elements with respect to each other for a given displacement of the actuating means, and connecting means electrically joined with the conductive paths of the first and second elements for providing an output signal determined by the position of one element with respect to the other.

4,309,690
MINIATURE VARIABLE RESISTOR

Yutaka Shoji; Yoshio Suzuki; Shigekata Sugiura, and Akihiko Inoue, all of Soma, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

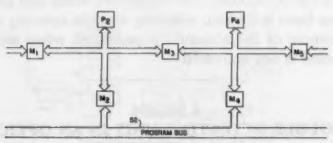
Filed Mar. 21, 1980, Ser. No. 132,537
Claims priority, application Japan, Mar. 27, 1979, 54-39432[U]
Int. Cl.³ H01C *10/32*
U.S. Cl. 338—163 8 Claims

1. A miniature variable resistor comprising:
an insulating substrate formed with a hole;
a resistance element carried on a front surface of said insulating substrate and extending around said hole;
a rotor member formed of synthetic resin and including an operating portion, a sliding contact portion adapted to slide on said front surface of said insulating substrate in contact herewith, and a hollow portion extending in the axial direction of said rotor member;
a slide member fixed to said rotor member and including a slider slidable on said resistance element and an elastic portion protruding into said hollow portion of said rotor member; and
means for holding said rotor member in place on said insultating substrate, said holding means including a shaft member penetrating said hole of said insulating substrate to protrude into said hollow portion of said rotor member from a rear surface of said insulating substrate and engage said elastic portion of said slide member to be held securely thereby.

4,309,691
STEP-ORIENTED PIPELINE DATA PROCESSING SYSTEM

Kenneth R. Castleman, Glendale, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Division of Ser. No. 873,731, Feb. 17, 1978. This application Apr. 3, 1979, Ser. No. 26,738
Int. Cl.³ G06K *13/00, 9/00*
U.S. Cl. 340—146.3 MA 8 Claims

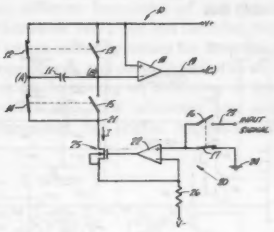


1. An architecture of a step-oriented pipeline data processing system comprised of cascaded computing modules, each module including a programmable general purpose processor, a memory for storing a program for the processor, and a general purpose read/write memory, where the memory of each successive module in cascade is shared with the processor of the next module to serve as an output memory for one processor and the input memory for the next processor.

4,309,692
INTEGRATING ANALOG-TO-DIGITAL CONVERTER

John B. Crosby, Yorba Linda, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Nov. 14, 1978, Ser. No. 960,696
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 NT 32 Claims



1. Apparatus for converting an input signal which is bipolar with respect to a common potential and has an amplitude representing an analog quantity into a digital signal representing the quantity comprising:
a capacitor having first and second terminals;
a controlled current source, having an input terminal adapted for receipt of said input signal and having an output terminal, for producing through said output terminal a unipolar current having a value determined by the value of said input signal during a first fixed-duration time period and having a fixed value during a second variable-duration time period;
first switch means for alternately connecting said current source input terminal to said input signal during a first fixed time period and to said common potential during a second variable time period;
a source of supply potential;
second switch means for connecting said source of supply potential and said current source output terminal to said first and second capacitor terminals, respectively, during said first time period and for connecting said source of supply potential and said current source output terminal to said second and first capacitor terminals, respectively, during said second time period, said controlled current source modifying from an initial charge and in a first direction the charge on said capacitor at a rate determined by said input signal during said first time period and modifying the charge on said capacitor in the opposite direction and at a fixed rate during said second time period;
means responsive to said capacitor for generating a timing signal when the charge thereon returns to said initial charge;
means for generating regularly recurring timing pulses,
counting means responsive to said timing pulses for continuously and alternately generating an up count and a down count between predetermined low and high counts;
timing circuit means responsive to said counting means and said timing signal generating means for operating said first and second switch means, said low and high counts establishing the starts of said first and second time periods, respectively, said timing signal establishing the end of said second time period; and
means responsive to said timing signal generating means for determining the count in said counting means upon the occurrence of said timing signal, said count being representative of said input signal.

4,309,693

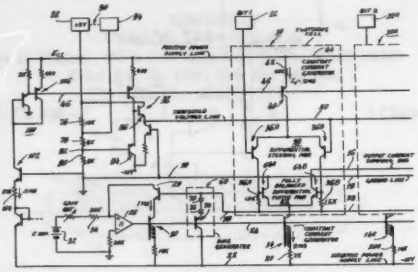
SOLID STATE DIGITAL TO ANALOG CONVERTER

Robert B. Craven, Wayland, Mass., assignor to Analog Devices, Incorporated, Norwood, Mass.

Continuation of Ser. No. 945,806, Sep. 26, 1978, abandoned, which is a division of Ser. No. 651,728, Jan. 23, 1976, Pat. No. 4,141,004, which is a division of Ser. No. 505,477, Sep. 12, 1974, Pat. No. 3,961,326. This application Sep. 4, 1979, Ser. No. 72,040

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 DA **6 Claims**



1. In an integrated-circuit digital-to-analog converter of the type having a plurality of transistors connected as constant-current sources the currents of which can be directed selectively to an output line in accordance with digital logic signals;

signal translation means for receiving such digital logic signals and for controlling said constant-current sources corresponding; said translation means comprising:

switch means having first and second inputs;

logic signal means connected to said first input to apply thereto a logic signal of either high or low state;

threshold voltage circuit means connected to said second input to apply thereto a threshold voltage;

power supply means energizable by an external voltage to provide a power supply voltage directly proportional to said external voltage;

said switch means including transistor means and circuit means interconnected therewith and with said power supply means to produce an output current responsive to the state of said logic signal with respect to said threshold voltage, said output current being operable to control said constant-current source to direct the current thereto to said output line when said logic signal corresponds to one of said states; and

threshold-voltage-setting means for developing said threshold voltage applied to said second input;

said threshold voltage setting means including selectively-conditionable means shiftable into either of two conditions to produce either (1) a relatively low-level threshold voltage for use with TTL logic signals, or (2) a relatively higher-level threshold voltage having a magnitude which is directly proportional to the magnitude of said power supply voltage, for use with CMOS logic signals.

4,309,694

ZERO DISPARITY CODING SYSTEM

Paul S. Henry, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 27, 1980, Ser. No. 134,485

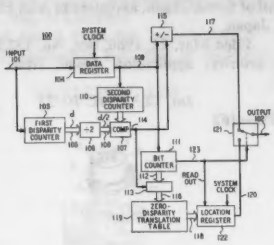
Int. Cl.³ H04L *3/02*; H03K *13/24*

U.S. Cl. 340—347 DD **12 Claims**

1. Apparatus (**100**) for converting a first block (**200**) of n binary digits having random disparity to a second block (**203, 204**) having zero disparity, where n is an even number, CHARACTERIZED BY

means (**103**) for determining the disparity of said first block;

means (**103, 104, 106, 107, 110, 111**) for selecting a bit position within said first block which defines two digit segments each having half the disparity of said first block; and



means (**115**) for inverting all of the digits within one of said segments.

4,309,695

ELECTRONIC ALARM CIRCUIT

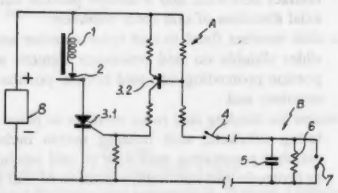
Gilbert Guillemot, 7 Liberation St., 95650 Courcelles on Viosne, France

Filed Dec. 18, 1979, Ser. No. 104,856

Claims priority, application France, Dec. 27, 1978, 78 36419

Int. Cl.³ G08B *29/00*

U.S. Cl. 340—514 **9 Claims**



1. An electric alarm circuit comprising an alarm indicating section with an electromagnet having a movable armature and a normally closed contact, movement of the armature being arranged to operate an alarm, a sensor circuit comprising at least one switch alarm means, a capacitor and a resistor, and a trigger circuit causing the electromagnet to move the armature when the capacitor is charging, and connected in series with the normally closed contact, said capacitor being connected at the input of the trigger circuit through a normally closed test switch means located close said alarm indicating section, such that charging of the capacitor causes the trigger circuit to briefly conduct and energize the electromagnet thereby moving the armature, the movement of the armature causing the trigger circuit to become non conductive when said test switch means has been activated, whereby a single opening and closing movement of the armature is produced when said switch alarm means is not activated.

4,309,696

TROUBLE DETECTING UNIT IN AN OPTICAL SECURITY DEVICE

Shunichi Nagai, Komatsu, and Yasuhiro Umano, Terai, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Jun. 26, 1978, Ser. No. 918,835

Int. Cl.³ G08B *29/00*; F16D *9/00*

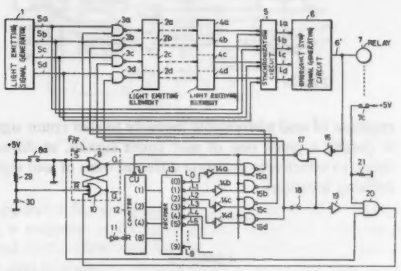
U.S. Cl. 340—515 **4 Claims**

1. In an optical security device wherein at least one light beam is emitted into a hazardous area and an emergency stop signal is applied to cause the abrupt halting of a hazardous

machine in response to interception of the light beam, a trouble detecting unit comprising:

a detection circuit which operates during a testing time period in which the hazardous machine is not energized and operation of said optical security device is not required, to detect a fault in said optical security device,

wherein said detection circuit comprises a counter and a scanning circuit for scanning and intercepting, one by one, input signals to a plurality of light emitting elements which emit light beams and means for detecting faults in



said optical security device on a condition that an emergency stop signal is not generated in response to the interception of each of said input signals wherein said scanning circuit is driven by the output of said counter and the count of said counter at the end of the testing time period indicates a place of disorder when a fault has been detected; and

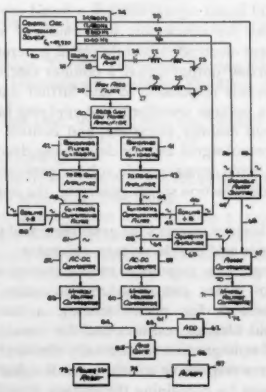
switching means for preventing energization of the hazardous machine at the end of said testing time period in response to the detection of a fault in the optical security device during the testing time period.

4,309,697

MAGNETIC SURVEILLANCE SYSTEM WITH ODD-EVEN HARMONIC AND PHASE DISCRIMINATION

Jon N. Weaver, Boca Raton, Fla., assignor to Sensormatic Electronics Corporation, Deerfield Beach, Fla.

Filed Oct. 2, 1980, Ser. No. 193,038
Int. Cl.³ G08B *13/22*
U.S. Cl. 340—572 **16 Claims**



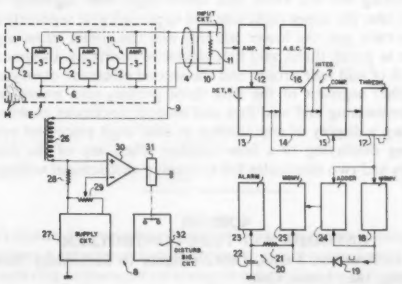
1. Apparatus for detecting the presence within a surveillance zone of a body of high permeability material, the latter being constructed, when linked in said zone with both a magnetic field varying at a fundamental frequency and the substantially constant magnetic field of the earth, to produce a detectable signal containing both odd and even harmonics of said fundamental frequency, said apparatus comprising means for establishing in said zone said varying magnetic field, means for coupling to said zone to detect signals produced by said body, means coupled to said coupling means for separately determining for a detected signal the respective amplitude of a first and second component thereof whose respective frequencies are equal to two different harmonics of said fundamental frequency, one harmonic being odd and the other being even, said determining means including means for determining the phase of said first component, and means coupled to all of said determining means for furnishing an indication of the presence of said body within said zone whenever said amplitudes and phase simultaneously fall within respective predetermined limits.

4,309,698

ACOUSTIC FIRE DETECTION CIRCUIT RESPONSIVE TO MICROCAPSULE RUPTURES

Daniel Lecuyer, Le Pecq, and Anthonius H. Pietersen, Thoiry, both of France, assignors to La Detection Electronique Francaise Protecbat, Vanves, France

Filed Aug. 7, 1979, Ser. No. 64,464
Claims priority, application France, Aug. 9, 1978, 78 23453
Int. Cl.³ G08B *17/08*
U.S. Cl. 340—590 **12 Claims**



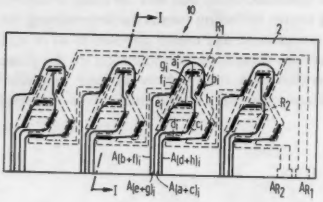
1. An installation for the early detection of a fire in an enclosure, comprising a plurality of noise producing means distributed in the enclosure and producing said noise upon an abnormal rise in the temperature in the enclosure, and an acoustic detecting circuit for detecting noise and setting off an alarm in the presence of said abnormal rise in temperature, said noise producing means being micro-containers each containing an extinguishing gas which has a vapour pressure capable of breaking the micro-container as a result of said rise in temperature and said detecting and alarm circuit comprises at least one microphonic transducer and a combined filtering circuit and digital processing circuit connected to the transducer for producing an alarm signal when the noise level produced by the bursting of the micro-containers reaches a predetermined level.

4,309,699

PASSIVE ELECTRO-OPTICAL DISPLAY DEVICE

Karl M. Tauer, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 1, 1979, Ser. No. 90,293
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1978, 2849381
Int. Cl.³ G09F 9/32
U.S. Cl. 340—715 12 Claims



1. In a passive optical display device having at least one digit place, said device comprising a pair of plate. being connected together in space relationship to form a cavity containing a medium switchable between two optical states by an application of an electrical field, each of said plates on a surface facing the cavity having electrically conductive coatings with the coatings on a first of said pair of plates of each digit being arranged in an electrode pattern of seven segments having upper, center, and lower cross segments and upper left, upper right, lower left, and lower right side segments, and the second of said pair of plates being provided with two electrodes with the first of said electrodes overlying four of the seven segments of the first plate and the second of the two electrodes overlying the other three of the segments, the improvement comprising means for interconnecting the seven segments into four actuatable groups with three of said groups having two segments and the fourth group only having one segment, said means interconnecting the top cross and lower right side segments as group one, the upper right side and upper left side segments as group two, and the lower left side and the center cross segments as group three, said first electrode overlying a segment in each of said four groups and the second electrode overlying the other segment of the first three groups, said means for interconnecting and said first and second electrodes enabling creating a display of any number at each digit place and preventing displaying of a false number when any of the four groups and two electrodes fail to receive an electrical voltage.

4,309,700

CATHODE RAY TUBE CONTROLLER

Alan D. Kraemer, Tustin, Calif., assignor to Technology Marketing, Inc., Irvine, Calif.

Filed May 22, 1980, Ser. No. 152,432
Int. Cl.³ G09G 1/16
U.S. Cl. 340—726 27 Claims

1. A circuit for generating addressing signals for a refresh memory in a CRT display, as well as video control signals for said CRT display, comprising:

a counter synchronized to the sweep rate of the cathode ray gun of said CRT for generating count signals; and

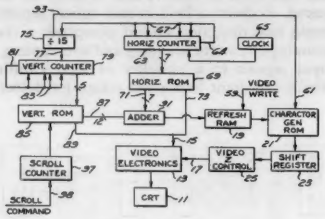
a memory, addressed by said count signals, for providing output data words defining said refresh memory addressing signals and said video control signals.

23. A circuit for permitting flexible scrolling of data on a cathode ray tube display, comprising:

a counter for providing output count signals synchronized to the location of the cathode ray gun of said CRT display on the screen of said display;

an addressable memory responsive to said count signals for generating signals defining the location of elements of said data on said display; and

means for controlling said addressable memory to alter the



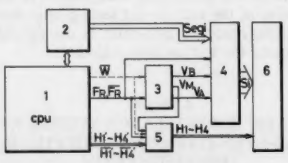
response of said addressable memory to said count signals to permit a given one of said count signals, at different times, to selectively generate different ones of said signals defining locations.

4,309,701

LSI DEVICE INCLUDING A LIQUID CRYSTAL DISPLAY DRIVE

Toshio Nishimura, Jyoyo, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 18, 1979, Ser. No. 40,173
Claims priority, application Japan, May 18, 1978, 53-59554
Int. Cl.³ G09G 3/36; G04C 10/00; G09F 9/35; G04G 9/04
U.S. Cl. 340—784 3 Claims



1. In a circuit for driving a liquid crystal display, said liquid crystal display including segment electrodes and a counter electrode, said circuit including a segment electrode selection signal generator for driving selected ones of said segment electrodes of said liquid crystal display, a liquid crystal enable voltage generator for developing a plurality of voltages to drive said segment electrode selection signal generator and for developing a further output signal, a counter electrode selection signal generator responsive to said further output signal for developing a voltage waveform and applying said voltage waveform to said counter electrode, and control means for developing a control signal and for developing driving signals for driving said liquid crystal enable voltage generator and said counter electrode selection signal generator, the improvement comprising:

a plurality of bleeder resistors for generating said plurality of voltages from said enable voltage generator;

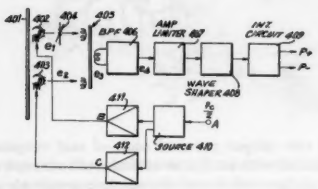
open-circuiting means responsive to said control signal from said control means and connected in series with said bleeder resistors for open-circuiting a current path through said bleeder resistors and for constraining the plurality of voltages to a substantially identical level; and

clamping means responsive to said control signal from said control means for containing the voltage waveform being applied to said counter electrode by said counter electrode selection signal generation to a voltage which is substantially equal to said substantially identical level.

4,309,702
DISPLACEMENT DETECTING APPARATUS

Katsutoshi Mibu, Kamagaya, and Hikaru Kitsunezaki, Kamakura, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 23, 1979, Ser. No. 14,318
Claims priority, application Japan, Feb. 24, 1978, 53-19906
Int. Cl.³ G08C *19/22, 19/16;* G01B *7/14*
U.S. Cl. 340—870.18 **14 Claims**



1. Apparatus for detecting the displacement of a member having a magnetic scale thereon, said magnetic scale being provided with calibrating signals of a predetermined wavelength, said apparatus comprising:

first and second magnetic heads disposed to reproduce the calibrating signals on said magnetic scale as said scale and said heads are displaced relative to each other;

means for energizing said first and second magnetic heads with pulse signals, whereby each of said magnetic heads produces a balanced modulated pulse signal having at least a predetermined harmonic and being derived from the calibrating signal reproduced from said magnetic scale and the energizing pulse signal supplied thereto;

adding means for adding the balanced modulated pulse signals produced by said first and second magnetic heads to obtain a phase modulated pulse signal;

selecting means for selecting a predetermined higher harmonic of said phase modulated pulse signal;

means for detecting predetermined increments of phase shift in said selected higher harmonic of said phase modulated pulse signal to produce output pulse signals representing corresponding increments of displacement; and

amplitude equalizing means for equalizing the amplitudes of at least said predetermined harmonic in the balanced modulated pulse signals produced by said first and second magnetic heads.

4,309,703
SEGMENTED CHIRP WAVEFORM IMPLEMENTED RADAR SYSTEM

Richard E. Blahut, Owego Township, Broome County, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1979, Ser. No. 107,815
Int. Cl.³ G01S *7/28*
U.S. Cl. 343—17.2 PC **8 Claims**

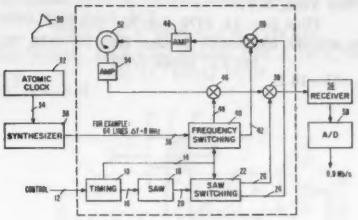
1. Pulse transmitting apparatus for illuminating a target area of interest, said apparatus comprising:

(a) generator circuit means for providing a train of chirped pulses, each of said pulses in said train being identical;

(b) synthesizing circuit means for providing a discrete set of carrier frequencies uniformly spaced from each other within a predetermined bandwidth;

(c) signal mixing circuit means, operatively coupled to said generator circuit means and said synthesizing circuit means for modulating one each of said chirped pulses onto one of said carrier frequencies to form a segmented chirped output waveform;

(d) timing circuit means, operatively coupled to said generator circuit means and said synthesizing circuit means for generating a series of timing pulses and for gating thereby the respective output signals of said generator and synthesizing means to said signal mixing circuit means; and

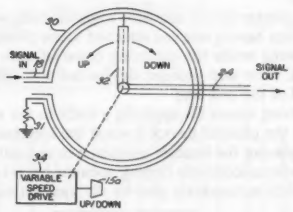


(e) antenna means, coupled to the output of said signal mixing circuit means, for transmitting said segmented chirped output waveform thereof to illuminate the target area of interest.

4,309,704
MECHANISM OF IMPARTING ILLUSORY DOPPLER FREQUENCY CHARACTERISTICS TO A RERADIATED IMPINGING RADAR SIGNAL

Warren A. Anderson, Tiverton, R.I., assignor to United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 5, 1975, Ser. No. 629,187
Int. Cl.³ G01S *7/38*
U.S. Cl. 343—18 E **2 Claims**



1. A system for imparting illusory Dopper frequency characteristics to a reradiated impinging radar signal comprising:

a receiving antenna for receiving the impinging radar signal;

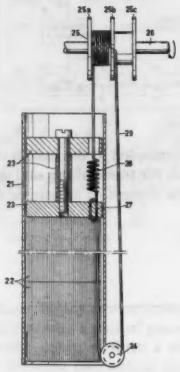
frequency changing means connected to said receiving antenna for imparting the illusory Doppler frequency characteristics upon said radar signal, said frequency changing means comprises, a conductor of predetermined length, a resistor connected to terminate said conductor, a plurality of gates having respective input terminals, output terminals and control terminals with said input terminals connected to respective spaced points along said conductor and said output terminals being connected in common, and switching means having a plurality of outputs connected to respective control terminals of said plurality of gates for sequentially closing and opening said gates in a predetermined sequence at a predetermined rate; and

a transmitting antenna connected to said frequency changing means for transmitting the radar signal containing the illusory Doppler frequency characteristics.

4,309,705
CHAFF EJECTING DEVICE

Carl O. Ulin, Järfälla, Sweden, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 14, 1979, Ser. No. 103,326
Claims priority, application Sweden, Dec. 14, 1978, 7812889
Int. Cl.[3] H04K *3/00*
U.S. Cl. 343—18 E 7 Claims



1. A chaff-ejecting device, including:

A. an elongate magazine having a plurality of longitudinal, tubular cells containing bundles of the chaff;

B. displacement means for displacing the bundles in the direction of an ejection end of each cell;

C. means provided at the ejection ends of the cells for freeing the chaff from the bundles by opening an enclosing cover thereof;

said device being characterized in that the means for displacing the bundles and freeing the chaff comprises, for each cell:

D. a plunger device movable longitudinally within the cell;

E. a wire having one end attached to the plunger device and running inside the enclosing cover of each bundle in the cell, from said plunger device out through the ejection end of the cell; and

F. driving means for applying a force to the wire and moving the plunger device toward the ejection end, thereby displacing the bundles contained in the cell;

said wire successively ripping open the covers of the bundles as they successively pass by the ejection end of the cell.

4,309,706
WIDEBAND DIRECTION-FINDING SYSTEM

Joseph A. Mosko, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 14, 1974, Ser. No. 524,427
Int. Cl.[3] H04B *7/00*
U.S. Cl. 343—100 R 9 Claims

1. A wideband direction-finding antenna system comprising;

a substantially cylindrical body having end portions;

a multi-arm spiral antenna mounted on one end portion of said body;

each arm of said multi-arm spiral having one end terminating at an inner circumference and another end terminating at an outer circumference;

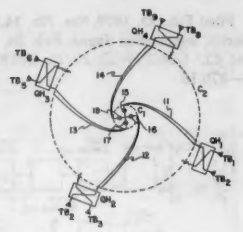
coupling means associated with each arm of said multi-arm spiral and connected to the end of each arm terminating at the outer circumference of the spiral;

said coupling means each having at least one input port and at least two output ports to provide a power split and predetermined phase relationship at said output ports;

said at least one input port being connected to the end of the associated arm at the outer circumference;

at least one pair of towel bar antennas connected to said at least two output ports of each of said coupling means associated with each arm of said multi-arm spiral;

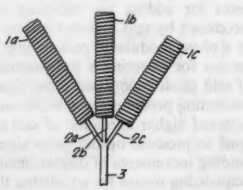
so that said antenna system is operative to provide combined Σ and Δ modes across a wide range of frequencies.



4,309,707
RADIO ANTENNAE STRUCTURES EMPLOYING HELICAL CONDUCTORS

James R. James; William James, and Robert J. Drewett, all of Swindon, England, assignors to National Research Development Corporation, London, England

Filed Apr. 29, 1980, Ser. No. 145,502
Claims priority, application United Kingdom, May 8, 1979, 15835/79
Int. Cl.[3] H01Q *1/36*
U.S. Cl. 343—895 4 Claims



1. A radio antenna structure including a plurality of end-fed antennae, and a terminal connected to end feed said antennae, wherein each of said antennae comprise a pair of extended conductors disposed in helical insulated windings of the same diameter and opposite chirality, said winds being coaxial, longitudinally coextensive and connected together at one end to form said end-feed, and wherein the antennae are each of different electrical lengths.

4,309,708
VEHICLE MOUNTING FOR A PORTABLE MICROWAVE ANTENNA DISH

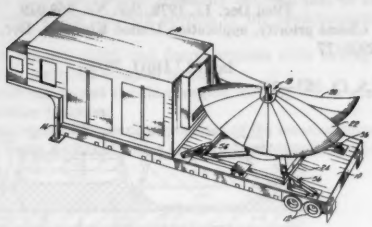
Michael G. Sayovitz, Sunland, Calif., assignor to Compact Video Sales, Inc., Burbank, Calif.

Filed Apr. 11, 1980, Ser. No. 139,156
Int. Cl.[3] H01Q *1/32*
U.S. Cl. 343—713 7 Claims

1. A portable dish antenna comprising:

a base, a dish antenna, means mounting the dish antenna on the base, vehicle having a platform positioned below the base, and wheels for moving the platform, the base normally resting on the platform and movable therewith on said wheels, a plurality of extendable legs secured to the base, the legs being movable between an extended position and a retracted position, the legs when extended supporting the base at a level above the platform, means for

raising and lowering the platform relative to the wheels to lift the platform and the antenna base before the legs are extended and lower the platform to transfer the weight of the antenna on to the extended legs and separate the plat-



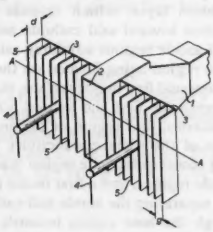
form from the base, and tension means connecting the base to the platform when the platform is lowered for suspending the weight of the platform from the base and the extended legs.

4,309,709

DUAL FREQUENCY AERIAL FEED ARRANGEMENTS

Stewart C. Hill, Leicester, England, assignor to The Marconi Company Limited, Chelmsford, England

Filed Jul. 30, 1980, Ser. No. 173,911
Claims priority, application United Kingdom, Aug. 23, 1979, 29347/79
Int. Cl.³ H01Q *1/52, 21/28*
U.S. Cl. 343—727 3 Claims



1. A dual frequency aerial feed arrangement comprising

a main feed horn for propagating energy at a first frequency and having a first direction of polarization, said feed horn having a longitudinal axis and an open mouth at one end transverse to said longitudinal axis;

a pair of ground plane members extending from opposite sides of said feed horn, said members being located in a first plane parallel to the mouth of said feed horn and spaced therefrom along said longitudinal axis;

a pair of dipole radiators for propagating energy at a second frequency and having a second direction of polarization orthogonal to said first direction of polarization, one of said dipole radiators being mounted on each of said ground plane members; and

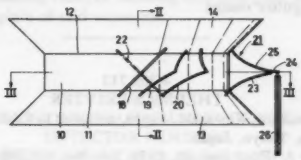
a plurality of upstanding parallel plates attached to said ground plane members and extending therefrom, the edges of said plates defining a second plane including the mouth of said feed horn, said arrangement minimizing excitation of said ground plane members by energy from said main feed horn thereby reducing the radiation angle of said feed horn.

4,309,710

MULTI-LOBE ANTENNA HAVING A DISC-SHAPED LUNEBERG LENS

Knut E. Cassel, Järfälla, Sweden, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 5, 1980, Ser. No. 118,814
Claims priority, application Sweden, Feb. 6, 1979, 7901046
Int. Cl.³ H01Q *19/06*
U.S. Cl. 343—754 4 Claims



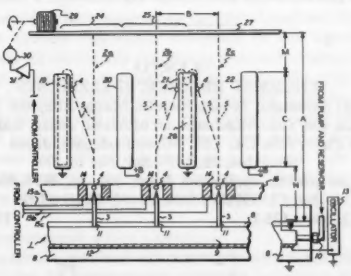
1. An antenna, operable within the micro wave range, comprising a round, disc-shaped lens with a radially varying refraction index, covered on at least one of the plane sides by a conductor, and comprising feeders distributed around the circumference for transmission and reception of electromagnetic energy passing through the lens, said feeders having the shape of thin wires, each feeder being situated in a plane which—as seen radially for each individual feeder—forms an angle of substantially 45° with the plane sides of the lens, all the wire-shaped feeders being inclined in the same direction so that for each individual feeder the feeder situated diametrically opposite thereof is oriented substantially perpendicular thereto.

4,309,711

HIDDEN GUTTER FOR INK JET RECORDING SYSTEM

Roger G. Teumer, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 2, 1980, Ser. No. 165,425
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 14 Claims



1. Fluid drop recording apparatus comprising

drop generator means for generating a plurality of fluid drop streams directed toward a target along flight paths enabling drops from the plural streams collectively to compose a record on a target,

drop charging means associated with each drop stream for charging drops within each drop stream,

a pair of deflection electrode means associated with each drop stream having means for coupling to electrical potentials for establishing an electric field in the flight path of a drop stream for deflecting charged drops,

with at least every other adjacent left and right drop streams being separated by a gutter deflection electrode means

including left and right drop collision surfaces interceptable by drops from the left and right streams respectively and left and right curved surfaces integral with the left and right collision surfaces respectively with the curves of each being in the direction of the other and

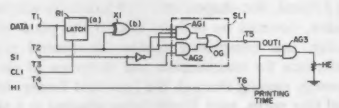
gutter means fluid coupled to the left and right curved surfaces of a gutter deflection electrode means for collecting fluid from drops impacting the left and right collision surfaces and flowing thereon around the curved surface to the gutter means.

4,309,712

THERMAL PRINTER

Sadao Iwakura, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1979, Ser. No. 105,788
Claims priority, application Japan, Dec. 27, 1978, 53-165874
Int. Cl.³ G01D *15/10*
U.S. Cl. 346—76 PH **4 Claims**



1. A thermal printer having:

memory means for storing a recording information pattern supplied to a thermal head; and

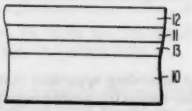
control means coupled to said memory means for comparing the recording information pattern stored in said memory means with a new recording information pattern to be supplied subsequently to the previous recording information pattern to said thermal head, and controlling drive time of said thermal head for the new recording information pattern according to an outcome of said comparison to reduce the drive time of said thermal head in case the new recording information pattern coincides with the recording information pattern stored in said memory means.

4,309,713

THERMAL RECORDING ELEMENTS

Fumiaki Shinozaki; Tomizo Namiki; Masao Kitajima; Tomoaki Ikeda, and Yuzo Mizobuchi, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jun. 26, 1979, Ser. No. 52,277
Claims priority, application Japan, Jun. 26, 1978, 53-77269
Int. Cl.³ G01D *15/34, 15/10;* B32B *15/08*
U.S. Cl. 346—135.1 **19 Claims**



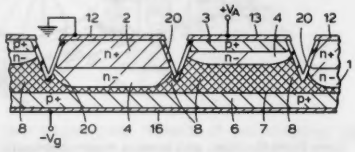
1. A thermal recording element having increased recording sensitivity to thermal radiation comprising a support having provided thereon a recording layer having high optical density which undergoes thermal deformation under the action of high intensity radiation to result in a difference in optical density between irradiated areas and non-irradiated areas and a chlorinated polyolefin layer adjacent said recording layer, said chlorinated polyolefin layer increasing the thermal recording sensitivity of said recording layer.

4,309,714

GATE TURN-OFF DIODES AND ARRANGEMENTS INCLUDING SUCH DIODES

John A. G. Slatter, Crawley, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 13, 1978, Ser. No. 969,029
Claims priority, application United Kingdom, Dec. 20, 1977, 52935/77
Int. Cl.³ H01L *29/80*
U.S. Cl. 357—22 **9 Claims**



1. A gate turn-off diode for power switching applications which comprises a semiconductor body having first and second opposite major surfaces, and comprising an n-type cathode region, a p-type anode region, a base region of a first conductivity type and a higher resistivity than that of said cathode and anode regions, a main current path which extends thorugh said base region between the cathode and anode regions, the base region having a conductivity-type-determining dopant concentration of at most about 5×10^{14} atoms per c.c. and forming a first p-n junction with one of the cathode and anode regions, a gate region which is of a second conductivity type opposite to that of the base region and forms with the base region a second p-n junction adjacent the main current path, and a gate electrode connected to the gate region for biasing the second p-n junction to permit interruption of said current path by forming a depletion layer, which extends from the biased second p-n junction toward said cathode and anode regions, said cathode and anode regions adjoining said first major surface and the gate region being located on the side of the base region remote from said first major surface, the thickness of the base region between the first and second p-n junctions being more than 25 microns, that region of the anode and cathode regions which is of the same conductivity type as the base region extending closer to the gate region than the other of the anode and cathode regions, and a first recess in said first major surface laterally separating the anode and cathode regions and extending through the base region towards said second p-n junction so that the depletion layer from the biased second p-n junction can extend to said first recess to interrupt the current path.

4,309,715

INTEGRAL TURN-ON HIGH VOLTAGE SWITCH

William F. MacPherson, Winfield Township, DuPage County, Ill.; Robert S. Scott, New Providence, and Peter W. Shackle, Bridgewater, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 28, 1979, Ser. No. 107,776
Int. Cl.³ H01L *29/00*
U.S. Cl. 357—37 **10 Claims**

1. A structure comprising:

a first semiconductor body whose bulk is of one conductivity type and which has a major surface;

separate first and fourth regions which are of the one conductivity type;

separate second and third regions which are of the opposite conductivity type;

the first, third, and fourth regions each having a portion which forms a part of the major surface;

the fourth region surrounds the third region so as to separate it from the bulk portion of the semiconductor body;

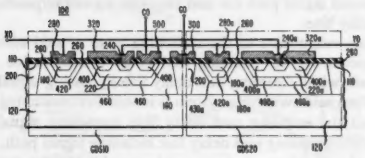
the first, third and fourth regions being spaced apart from each other;

the first, second, and third regions having relatively low resistivity as compared to the bulk portion of the semiconductor body and the fourth region having a bulk portion which is of intermediate resistivity between that of the first region and the bulk portion of the semiconductor body;

the first, second, third, and fourth regions each having a separate electrode coupled thereto;

the fourth region and the third region forming a first semiconductor junction;

the parameters of the various portions of the semiconductor body being such that with a forward-bias potential applied



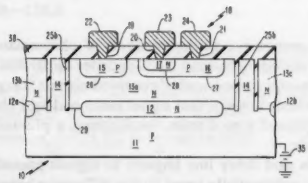
to the first and third regions and a forward-bias potential applied to the first semiconductor junction, there is facilitated a substantial current flow between the first and third regions via the bulk portion of the semiconductor body, and with the potential of the fourth region being insufficient to foward-bias the first junction and with the potential of the second region being sufficiently different from that of the first, third and/or fourth regions to cause a cross-sectional portion of the bulk of the semiconductor body between the first and third regions to be at a potential which is of greater magnitude that that of the first, third and/or fourth regions, there is facilitated an interrupting or inhibiting of current flow between the first and third regions.

4,309,716

BIPOLAR DYNAMIC MEMORY CELL

Badih El-Kareh, Milton, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 22, 1979, Ser. No. 87,596
Int. Cl.³ H01L *27/04, 27/02*
U.S. Cl. 357—50 **3 Claims**



1. A semiconductor array having enhanced capacitance comprising:

a body of semiconductor material of a first conductivity type having a surface,

a plurality of isolated mesas of a second conductivity type material on said surface,

each of said mesas having substantially vertical side walls extending from said surface,

each of said mesas forming a rectifying junction with said body,

a circumferential coating of insulating material having a thickness of less than 500 angstroms on each of the side walls of each of said mesas, and

a plurality of orthognal, substantially vertical ridges of conductive material extending from and in good electrical contact with said surface, between and surrounding said mesas and contacting said insulating material,

each of said mesas including a transistor formed therein, and

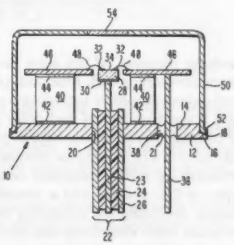
each of said mesas forming the first plate of a capacitor coupled to the transistor therein, said body and said conductive ridges surrounding said mesas forming the second plate of said capacitor and the rectifying junction between the mesas and the body and said circumferential coating of said insulating material isolating said first plate from said second plate of said capacitor.

4,309,717

COAXIALLY MOUNTED HIGH FREQUENCY LIGHT DETECTOR HOUSING

Rene E. Cardinal, Montreal, Canada, assignor to RCA Corporation, New York, N.Y.

Filed Jul. 16, 1979, Ser. No. 58,021
Int. Cl.³ H01L *23/02, 23/12, 23/16*
U.S. Cl. 357—74 **9 Claims**



1. In a light detector housing which comprises:

a header having two openings therethrough; an electrical bias lead and an electrical signal lead, each extending through said header, wherein said bias lead and said signal lead are fastened to and electrically isolated from said header; a light detector having two terminals and a light sensitive surface mounted on said signal lead and having a first terminal electrically connected to said signal lead; means for electrically connecting a second terminal of said light detector to said bias lead; an electrically conducting cap fastened to and electrically connected to the header so as to enclose said bias lead, said electrical signal lead and said light detector; a light transmissive medium mounted in said cap, whereby light impinging on said light transmissive medium enters the housing and impinges on the light sensitive surface of said light detector mounted on and;

the improvement which comprises:

an electrical signal lead which comprises a coaxial transmission line, having a central conductor, wherein a first terminal of said light detector is electrically connected to the central conductor; and

an electrically conducting sheet, electrically connected to said bias lead and extending at least partially around said light detector;

means for supporting said electrically conducting sheet;

one or a plurality of capacitors each having a first plate electrically connected to the header and a second plate electrically connected to said electrically conducting sheet wherein said capacitors are of an effective capacitance to provide a low impedance electrical connection between the electrically conducting sheet and the header at radio frequencies and a high impedance at zero frequency.

4,309,718

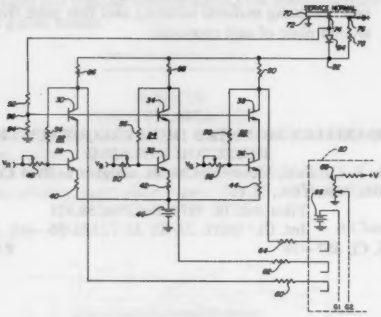
SERVICE SWITCH ARRANGEMENT FOR LOW LEVEL MATRIXING TYPE TELEVISION RECEIVER

Fred D. Johnson, Evanston, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Sep. 22, 1980, Ser. No. 189,498

Int. Cl.³ H04N 9/62

U.S. Cl. 358—10 **9 Claims**



1. In a television receiver of the type having a low level matrixing system developing red, blue and green color signals and a high level output amplifier including a plurality of stages each coupling a respective one of said color signals to a cathode of a color cathode ray tube, the improvement comprising:

switch means having a first terminal connected to a source of ground potential a second terminal connected to a high level supply of DC voltage and a common terminal, said switch means including an operating member having a normal position interconnecting said second and common terminals and a service position interconnecting said first and common terminals;

means coupled to said second terminal for developing a DC control voltage having a value less than said high level DC supply voltage; and

circuit means coupled to said common terminal and to said control voltage developing means, said circuit means being responsive to the normal position of said operating member for enabling the operation of each of said output amplifier stages and responsive to the service position of said operating member for inhibiting the operation of each of said output amplifier stages while coupling said control voltage to each of said cathodes for facilitating the adjustment of the cut-off point of said cathode ray tube.

4,309,719

DUAL STANDARD PAL/SECAM RECEIVER CIRCUITRY

Werner Hinn, Zollikerberg, Switzerland, assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 105,581, Dec. 20, 1979, abandoned.

This application Oct. 31, 1980, Ser. No. 202,503

Claims priority, application United Kingdom, Jan. 9, 1979, 801/79

Int. Cl.³ H04N 9/535

U.S. Cl. 358—21 R **4 Claims**

1. In a color television receiver subject to reception of composite color television signals inclusive of a luminance component and of a chrominance component encoded in SECAM format, and to reception of composite color television signals inclusive of a luminance component and of a chrominance component encoded in PAL format; said receiver including: PAL decoder apparatus; a first bandpass filter having a passband encompassing the frequency band occupied by said chrominance component encoded in SECAM format; means responsive to received signals passed by said first bandpass filter for transcoding a chrominance component of SECAM format to a chrominance component of a quasi-PAL format; a path for received signals by-passing said transcoding means and including a second band-pass filter having a passband encompassing the frequency band occupied by said chrominance component encoded in PAL format; and a switching system which (a) couples the output of said transcoding means to the input of said PAL decoder apparatus and decouples the output of said bypassing path therefrom, when in a first switching state, and (b) couples the output of said bypassing path to the input of said PAL decoder apparatus and decouples the output of said transcoding means therefrom, when in a second switching state; apparatus comprising:

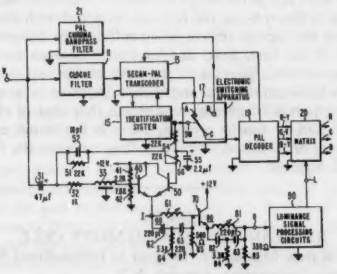
a chrominance component trap circuit;

a delay line;

a first signal path for said received signals inclusive of said delay line;

a second signal path for said received signals bypassing said delay line;

means, responsive to the switching state of said switching system, for (a) enabling said delay line inclusive signal path while disabling said delay line bypassing signal path, when said switching system is in said first switching state, and (b) enabling said delay line bypassing signal path while disabling said delay line inclusive signal path, when said switching system is in said second switching state; and



means, responsive to the products of chrominance component decoding by said PAL decoder apparatus and to the luminance component of received signals traversing both the enabled one of said signal paths and said chrominance component trap circuit, for forming a plurality of color signals;

wherein said delay line imparts to signals passed thereby a delay substantially equal to the difference between (1) the delay incurred in processing of the chrominance component of said received signals when said switching system is in said first switching state, and (2) the delay incurred in processing of the chrominance component of said received signals when said switching system is in said second switching state; and

wherein the delay imparted by said chrominance component trap circuit to signals passed thereby is of such a magnitude that the luminance component to which said color signal forming means responds when said switching system is in said second switching state suffers a delay which substantially matches the delay incurred in processing of the chrominance component of said received signals when said switching system is in said second switching state.

4,309,720

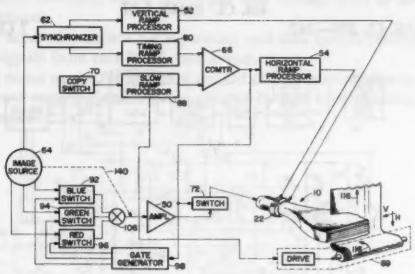
APPARATUS AND METHOD FOR PRODUCING AN IMAGE ON A SENSITIZED SURFACE

Dan F. Denham, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Continuation-in-part of Ser. No. 932,148, Aug. 9, 1978, abandoned, which is a continuation of Ser. No. 692,399, Jun. 3, 1976, abandoned. This application Jan. 15, 1980, Ser. No. 112,366

Int. Cl.³ H04N *1/46*

U.S. Cl. 358—75 **22 Claims**



1. A system for producing an image on a sensitized surface, comprising:

(a) a cathode-ray tube having a faceplate defining a plurality of display areas;

(b) means for generating a first preselected component of a first section of an image within a first one of said display areas and a second preselected component of a second image section within a second one of said display areas; and

(c) means for causing said sections of said image to move across said display areas so as to successively generate in each said area the corresponding component of each said section.

4,309,721

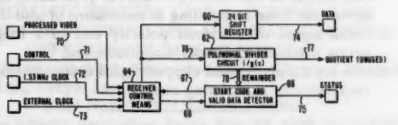
ERROR CODING FOR VIDEO DISC SYSTEM

Todd J. Christopher, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 12, 1979, Ser. No. 84,396

Int. Cl.³ H04N *5/76*; G06F *11/00, 11/12*; G11B *7/00*

U.S. Cl. 358—128.5 **9 Claims**



1. An encoding apparatus for encoding an information word on video signal for recording on a video disc, the encoded signal to be subsequently recovered in video disc player having a compatible decoder, said encoding apparatus comprising:

means (49)(47) for generating a start code corresponding to a start sequence;

means (45) responsive to said information word for generating a prescribed error code word;

means (52)(54) for combining said information word and said error code;

means (36) for modulating said video signal in accordance with a data word comprising said start code and said combined information word and error code word; and

wherein said error code word produces in said compatible decoder an error check result over at least a portion of said data word equal to said start code when said portion of the data word is free from errors.

4,309,722

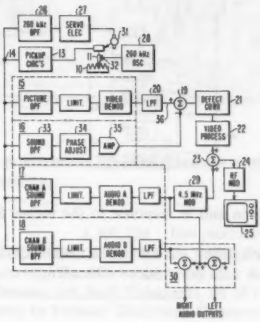
VIDEO DISC PLAYER NOISE REDUCTION CIRCUIT

Richard C. Palmer, Blawenburg, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 27, 1980, Ser. No. 153,626

Int. Cl.³ H04N *5/76*

U.S. Cl. 358—128.5 **8 Claims**



1. A video disc player for recovering prerecorded signals from a disc record, wherein the prerecorded signals are formed from the composite sum of a first signal modulating a first carrier and a second signal modulating a second carrier, said player comprising:

signal recovery means cooperating with the disc record for generating an electrical manifestation of the prerecorded signals;

first circuit means connected to receive said electrical manifestation of the prerecorded signals for selectively demodulating said first carrier;

second circuit means connected to receive said electrical manifestation of the prerecorded signals for selectively extracting the second modulated carrier from the composite sum of signals;

third circuit means connected to receive the second modulated carrier from the second circuit means for conditioning the phase characteristic of the second modulated carrier to simulate the phase characteristics of frequency components of the demodulated signal in the same spectral band as the second modulated carrier;

fourth means for linearly subtracting the phase conditioned second modulated carrier from the demodulated signal.

4,309,723

APPARATUS AND METHOD FOR REGISTRATION AND SHADING OF COLOR TELEVISION CAMERAS

John O. Ryan, Cupertino; Joseph L. Corkery, San Carlos; Edward P. Sudyka, Santa Clara; Gerow D. Brill, Redwood City; Anne M. Reagan, Santa Clara, and James R. Holzgrafe, Sunnyvale, all of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Apr. 14, 1980, Ser. No. 140,281

Int. Cl.³ H04N *5/14, 5/22*

U.S. Cl. 358—163 **19 Claims**

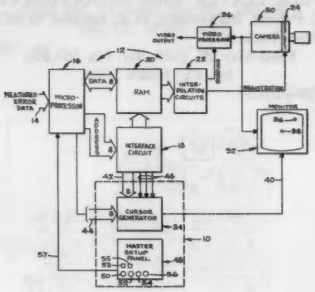
1. A system for correcting spatial and shading errors occurring in a television picture, wherein the errors are stored in memory data point address locations, comprising the combination of;

means including a monitor for visually selecting and electronically locating the extent of the data points to be corrected;

means for determining the correction values to be made to the data commensurate with the selected area;

means for retrieving the data from memory in response to the means for determining;

means for decrementing or incrementing the retrieved data



by a given unit in response to the means for determining the correction; and

means for loading the corrected data back into memory at the same data point address location.

4,309,724

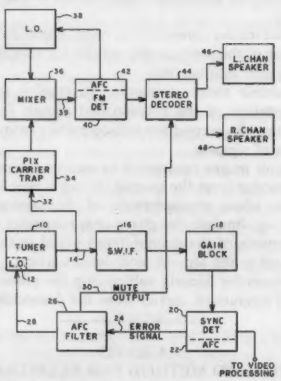
DUAL TIME CONSTANT AFC FILTER

Victor G. Mycynek, Des Plaines, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Aug. 18, 1980, Ser. No. 179,389

Int. Cl.³ H04N 5/50

U.S. Cl. 358—195.1 **7 Claims**



1. In a television receiver having a sound system, a local oscillator, circuitry for developing an error signal for controlling the frequency of the local oscillator, and an AFC filter for filtering the error signal and coupling it to the local oscillator, an improved AFC filter comprising:

a first, short time constant signal path receiving the error signal for quickly coupling the latter signal to the local oscillator;

a second, long time constant signal path receiving the error signal for filtering horizontal and vertical rate components therefrom and for coupling the filtered error signal to the local oscillator, including means for rendering said first signal path inoperative after an interval selected to permit the local oscillator to achieve frequency lock; and

means for muting the sound system in response to said first signal path being operative and for activating the sound system in response to said first signal path being inoperative.

4,309,725

SIGNAL PROCESSOR FOR BEAM-SCAN VELOCITY MODULATION

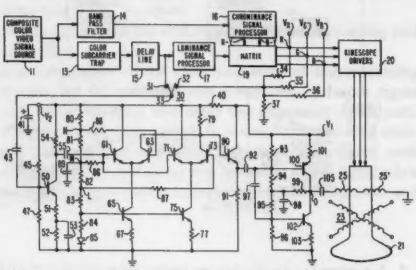
Willem H. Groeneweg, Ottenbach, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Aug. 26, 1980, Ser. No. 181,426

Claims priority, application United Kingdom, Oct. 23, 1979, 36746/79

Int. Cl.³ H04N 5/68

U.S. Cl. 358—242 **7 Claims**



1. In an image display system, including a source of image-representative signals; an image display device having a display screen and an electron gun assembly for directing at least one beam of electrons toward said display screen; means for effecting beam deflection in a manner causing said beam of electrons to repetitively trace a raster of scanning lines on said display screen; and means for modulating the velocity of scanning of said lines; apparatus comprising the combination of:

means coupled to said source for differentiating said image-representative signals;

double-ended limiter means, responsive to the differentiated signal output of said differentiating means, for developing a clipped signal output in which output signal excursions in one direction are clipped at a first predetermined level and output signal excursions in the opposite direction are clipped at a second predetermined level; said limiter means including first threshold establishing means for precluding said limiter means from responding to excursions of said differentiated signal of a first polarity and of a magnitude below a first threshold magnitude, and second threshold establishing means for precluding said limiter means from responding to excursions of said differentiated signal of a second polarity and of a magnitude below a second threshold magnitude; and

means for supplying said clipped signal output to said scanning velocity modulating means.

4,309,726

MUTING CIRCUIT IN A PCM RECORDING AND REPRODUCING APPARATUS

Hiromichi Tanaka, Yokohama; Takashi Hoshino, Fujisawa, and Takao Arai, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 28, 1980, Ser. No. 154,023

Claims priority, application Japan, May 28, 1979, 54-65034; Apr. 2, 1980, 55-42025

Int. Cl.³ G11B 5/00

U.S. Cl. 360—32 **6 Claims**

1. In a PCM recording and reproducing apparatus wherein digital data units representative of an analog audio signal are constructed into a data unit sequence with an error detection code being added to each of said data units for detecting coding errors within at least each of said data units, and data

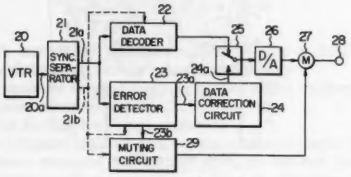
synchronizing signals are inserted one for every predetermined interval of said data unit sequence to constitute a PCM data sequence, said PCM data sequence being recorded on a record medium and reproduced from said record medium, and said data units are retrieved from said reproduced PCM data sequence and the retrieved data units are converted to an analog signal to reproduce the original analog audio signal;

a muting circuit comprising;

(a) error detection means for detecting coding errors in said data unit by said error detection code and producing an eror detection signal each time said coding error is detected;

(b) separation means for separating said data synchronizing signals from said PCM data sequence;

(c) count means for counting up said error detection signals, said counting means being cleared by said synchronizing signals;



(d) first control means for producing a first control signal when the count of said count means reaches a first predetermined count;

(e) second count means for producing a second control signal when the count of said count means immediately before cleared by said data synchronizing signal is equal to a second predetermined count smaller than said first predetermined count;

(f) third control means adapted to receive said first and second control signals for continuously producing a muting signal when said first control signal is received and blocking said muting signal when said second control signal is received; and

(g) muting means inserted in an analog audio signal path of a reproducing unit for interrupting the transmission of the analog audio signal in response to said muting signal.

4,309,727

AUTOMATIC REVERSE TAPE RECORDER WITH MEANS FOR STOPPING THE AUTOMATIC REVERSE OPERATION DURING RECORDING

Akira Osanai, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 5, 1979, Ser. No. 90,900

Claims priority, application Japan, Nov. 16, 1978, 53-141616; Nov. 16, 1978, 53-141618; Nov. 16, 1978, 53-157809

Int. Cl.³ G11B *19/02*

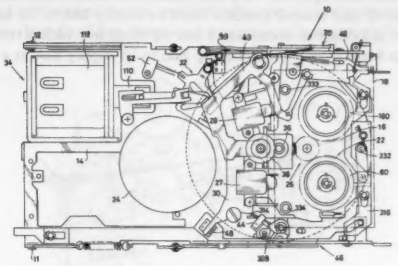
U.S. Cl. 360—69 **8 Claims**

1. An automatic reverse tape recorder which comprises:

a magnetic head-supporting board having two ends respectively supporting a forward head capable of recording and reproduction and a reverse head capable of reproduction, said board having a central part acting as the center of rotation of the board, said board being rotatably fitted to a fixed chassis and adapted to cause both forward and reverse heads to alternately project into the path of a tape when said board is rotated;

automatic reverse means for detecting the end of the tape and causing the tape to run in a direction opposite to that in which the tape is driven when its end is detected;

automatic reverse operation prevention means, and means for actuating said prevention means interlockingly with an operation member for recording of the recorder, to



thereby stop automatic reverse operation of the recorder during recording.

4,309,728

FRICTION FORCE DRIVE CAPSTAN TAPE RECORDER

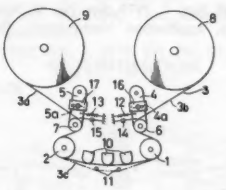
Yoshiyuki Takizawa; Norihiko Itoh; Takashi Kashiwazaki; Tomomitsu Takano, and Junji Kobayashi, all of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 20, 1979, Ser. No. 50,289

Claims priority, application Japan, Jun. 21, 1978, 53-84049[U]

Int. Cl.³ G11B *15/18, 19/02*

U.S. Cl. 360—71 **18 Claims**



1. In a reel to reel friction force drive capstan tape recorder wherein a tape is fed from a supply reel to a take-up reel, a motor for driving said take-up reel, said tape being wound between an idler, a drive capstan and rollers mounted on movable arms, means for biasing said arms to vary the winding angles of said tape relative to said capstan and said idler, the improvement comprising, means for sensing the position of at least one of said arms, control means responsive to said sensing means for controlling the rotational power of said take-up and supply reels, said recorder having a plurality of operational modes, and said control means including means for determining the rotational power to be imparted to said reels in accordance with the operational mode of said recorder.

4,309,729

MAGNETIC TAPE CASSETTE REPRODUCING AND/OR RECORDING SYSTEM

Warren B. Kice, 9429 Tobin Cir., Potomac, Md. 20854

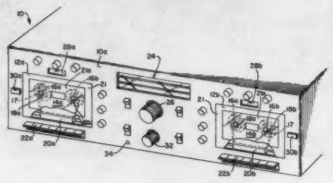
Filed Jun. 16, 1980, Ser. No. 159,464

Int. Cl.³ G11B *15/00*

U.S. Cl. 360—72.1 **25 Claims**

1. A tape cassette deck comprising a first means on said chassis for receiving a first tape cassette, second means on said chassis for receiving a second tape cassette, first transport means on said chassis and operable in a first mode in which it unwinds the tape of said first cassette from its supply hub to its takeup hub at a constant speed and in a second mode in which

it rewinds said tape from its takeup hub to its supply hub at a relatively fast speed, second transport means mounted on said chassis and operable in a first mode in which it unwinds the tape of said second cassette from its supply hub to its takeup hub at a constant speed and a second mode in which it rewinds said latter tape from its takeup hub to its supply hub at a rela-



tively fast speed, sensing means for responding to either one of said transport means completing its unwinding mode for generating an output signal, control means connected to said sensing means and to said first and second transport means for switching the other of said transport means to its unwinding mode and for switching said one transport means to its rewinding mode in response to said generation of said output signal.

4,309,730

METHOD OF READING AND/OR WRITING INFORMATION AND APPARATUS FOR CARRYING OUT THE METHOD

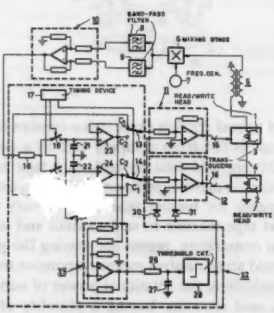
Hendrik J. Sanderson, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 5, 1979, Ser. No. 90,964

Claims priority, application Netherlands, Dec. 19, 1978, 7812286

Int. Cl.³ G11B *21/10*

U.S. Cl. 360—77 **9 Claims**



1. A method of positioning reading and/or writing heads arranged for alternately following consecutive recording tracks of a recording medium in the form of a tape, said tracks being substantially parallel one to the other and form an angle with the longitudinal axis of said recording medium, said method comprising:

providing a first and a second transducer for positioning said heads, respectively;

applying a first and a second control signal to said first and second transducers, respectively, for causing said heads to respectively follow a recording track;

comparing the relative positions of said heads; and

applying a third control signal, similar to said second control signal, to said first transducer in substitution for said first control signal when the relative positions of said heads differ by more than a predetermined amount.

4,309,731

RECORDING AND PLAYING SYSTEM FOR MAGNETIC TAPE FROM A CASSETTE

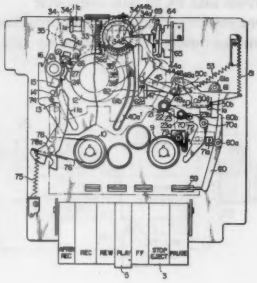
Masashi Yoshida, Nakaminato; Hideyuki Kawase, Katuta, and Tadashi Shinoda, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 4, 1979, Ser. No. 72,315

Claims priority, application Japan, Sep. 4, 1978, 53-107514

Int. Cl.³ G11B *15/66*; G03B *1/04*

U.S. Cl. 360—85 **7 Claims**



1. A magnetic recording and playing system comprising:

a motor;

drive means actuated by a rotational force of said motor, said drive means comprising at least one worm gear driven by said motor;

tape loading means performing a tape loading operation when said drive means is actuated to pull out magnetic tape from a cassette and wind the magnetic tape around a rotary head cylinder for a circumferential extent of a predetermined angle, said rotary head cylinder having a built-in rotary magnetic head, and said tape loading means comprising at least one movable guide support platform member juxtaposed against the magnetic tape and at least one locking member with which said at least one movable guide support platform member is brought into abutting engagement when said drive means is actuated;

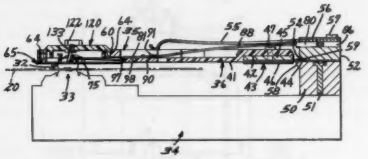
pinch roller means capable of bringing a pinch roller into pressing engagement with a capstan, said pinch roller being operative to advance the magnetic tape at a predetermined rate, said pinch roller means comprising a pinch roller arm supporting the pinch roller for rotation; and

means for causing the pinch roller to force the magnetic tape against the capstan, said means connecting said pinch roller means to said drive means to cause the pinch roller to force the magnetic tape against the capstan after tape loading is effected by said tape loading means, and said means for causing the pinch roller to force the magnetic tape against the capstan comprising an actuating member including a pin attached to said at least one worm gear for movement in conjunction with said drive means, a movable arm pushed and moved by said pin after said at least one movable guide support platform member is brought into abutting engagement with said at least one locking member, and a connecting arm connecting said movable arm to said pinch roller arm so that when said movable arm is moved the pinch roller on said pinch roller arm is caused to force the magnetic tape against the capstan.

4,309,732
TRANSDUCER SUPPORTING ASSEMBLY FOR DOUBLE SIDED FLOPPY DISK

Leonard E. Kronfeld, Minneapolis, and Ricky J. Madsen, Crystal, both of Minn., assignors to Nortronics Company, Inc., Minneapolis, Minn.

Filed Oct. 5, 1979, Ser. No. 82,237
Int. Cl.³ G11B 5/54, 5/48, 21/16, 5/22
U.S. Cl. 360—104 **3 Claims**



1. A transducer supporting assembly for a double sided floppy diskette recording system, comprising:

a transducer support carriage having a first magnetic transducer mounted thereon;

a thin flexible leaf hinge member;

an elongated support arm having a second magnetic transducer mounted thereon and adjacent one end thereof for contact with a recording medium in operative position, said support arm having a generally flat configuration of the surface thereof adjacent the recording medium in operative position, and having a recessed portion in said flat surface adjacent the end of said arm remote from said second transducer;

a first clamping plate configured to be received in said recessed portion of said arm;

a second clamping plate;

means connecting said clamping plates on opposite surfaces of one end of said leaf hinge member, and for connecting the leaf hinge and clamping plates to said arm with said first clamping plate positioned in said recess;

said first and second clamping plates having opposed straight edges cooperatively defining a bending axis or fulcrum for said leaf hinge; and

means mounting the other end of the leaf hinge to the carriage to position the support arm so that the first and second transducers are in generally opposed relationship, whereby the support arm can be hinged open to permit insertion of a diskette and closed to bring the first and second transducers into operative contact with opposite sides of the floppy diskette.

4,309,733
CHANGEOVER MECHANISM FOR THE MAGNETIC HEADS OR PINCH ROLLERS OF AN AUTOMATIC REVERSE TAPE RECORDER

Hideo Tomabechi, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

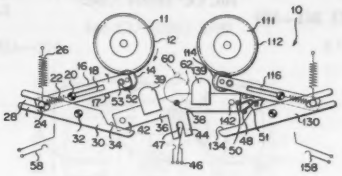
Filed Nov. 28, 1979, Ser. No. 98,049
Claims priority, application Japan, Dec. 25, 1978, 53-160724
Int. Cl.³ G11B 5/54, 21/22
U.S. Cl. 360—105 **6 Claims**

1. A changeover mechanism for a pair of magnetic heads or pinch rollers of an automatic reverse tape recorder having a pair of reel gears, said mechanism comprising:

a pair of first levers, each of which is provided with a lever gear which is respectively engaged with one of the reel gears and on the surface of which stopping means are provided;

a pair of electromagnetic solenoids, in each of which a movable rod is provided which is pulled towards the respective lever gear, upon receipt of a signal denoting the arrival of the end of the tape, into engagement with the stopping means of the respective lever gear to prevent rotation of the respective lever gear and to effect rotation of the respective first lever about the respective reel gear and drive of the first lever; and

a pair of second levers, respectively operatively connected to the pair of first levers and to a swingable magnetic head

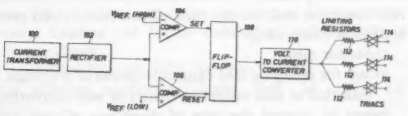


support board carrying said pair of magnetic heads or pinch rollers, so that upon drive of the first lever, the board is rotated to rock by engagement with the respective second lever to thereby effect operation of the respective magnetic head or pinch roller.

4,309,734
METHODS AND APPARATUS FOR LIMITING ELECTRICAL CURRENT TO A SUBSEA PETROLEUM INSTALLATION

Walter B. Warren, Seabrook, Tex., assignor to TRW Inc., Redondo Beach, Calif.

Filed Nov. 5, 1979, Ser. No. 91,536
Int. Cl.³ H02H 7/26
U.S. Cl. 361—58 **15 Claims**



14. Apparatus for limiting current in an alternating current power system for supplying electrical power to a load, comprising:

a primary winding connected in series with a current conductor of said system,

a secondary winding inductively coupled to said primary winding;

a current sensor for sensing the current amplitude in said power system and producing a first signal representative of said current amplitude;

means for providing a first reference signal and a second reference signal representative, respectively, of a predetermined higher than normal power system current and a predetermined lower than normal power system current;

comparison means for repeatedly comparing said first signal with said first reference signal and said second reference signal;

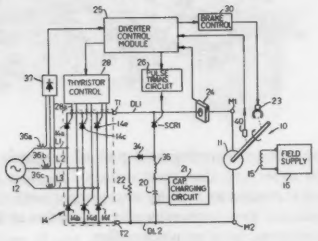
means for substantially open-circuiting said secondary winding automatically in response to said comparison means when said first signal becomes larger than said first reference signal; and

means for thereafter substantially short-circuiting said secondary winding automatically in response to said comparison means when said first signal becomes smaller than said second reference signal.

4,309,735
PROTECTIVE CIRCUITS FOR CONVERTER-SUPPLIED D.C. MOTOR

Gary C. Morris, Milwaukee, Wis., assignor to Harnischfeger Corporation, West Milwaukee, Wis.

Filed Oct. 30, 1979, Ser. No. 89,301
Int. Cl.[3] H02H 7/085
U.S. Cl. 361—100 1 Claim



1. Protective apparatus for use with an a.c./d.c. converter comprising thyristors and having output terminals which are connected by conductor means to the input terminals of the armature of a d.c. motor driven by said converter, said conductor means including a pair of conductors between said converter and said motor armature, said converter being controlled by firing circuit means connected to the gating terminals of said thyristors and operative to switch said thyristors on and off in a predetermined sequence to energize said armature and further operative to switch said thyristors off to shut down said converter and thereby turn off said motor, said protective apparatus comprising:

capacitor means;

means for charging said capacitor means to a voltage higher than that at said output terminals of said converter;

means to control the rate of discharge of said capacitor means;

resistor means;

said capacitor means and said resistor means each having one side connected to one of said conductors;

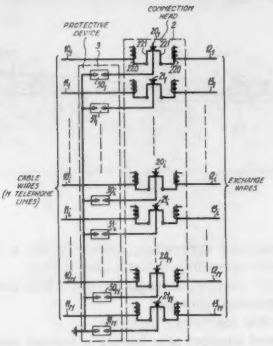
control thyristor means connected between the other sides of said capacitor means and said resistor means and the other of said conductors;

and control means, including means for sensing current flow in at least one of said conductors, responsive to a fault condition which causes increased current flow through said conductor means for providing a control signal for operating said control thyristor means to connect the charged capacitor means to said converter output terminals so as to block current flow from said converter to said armature, to connect said resistor means to said motor armature input terminals so as to divert current flow generated by said armature through said resistor means, and to operate said firing circuit means to shut off said converter, said control means including means connected between said resistor means and said capacitor means to prevent said capacitor means from discharging through said resistor means, inductance means connected in series circuit with said capacitor means to control the rate of discharge thereof, means for sensing current flow on the a.c. side of said converter, and brake means operative to stop armature rotation and wherein said control signal is further operative to operate said brake means.

4,309,736
PROTECTIVE DEVICE FOR LOW-VOLTAGE LINES

Albert M. Lissillour, Route de Toul Ar Lan, Tregastel, France (22730)

Filed Dec. 10, 1979, Ser. No. 101,718
Claims priority, application France, Dec. 8, 1978, 78 34657
Int. Cl.[3] H02H 1/04
U.S. Cl. 361—119 16 Claims



1. A protective device for low-voltage lines of a cable which is fitted to a cable connection head comprising two contact junctions for connecting in parallel two conductive wires of each cable line to two conductive wires of a switching exchange, said protective device comprising for each pair of a line wire and an exchange wire connected through a contact junction:

overvoltage protective means having a first terminal and a second terminal;

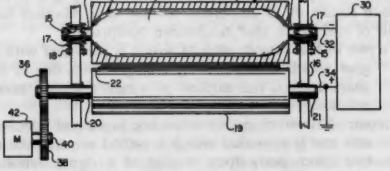
first conducting means secured to the body of said protective device for connecting said first terminal of said overvoltage protective means to said contact junction after said protective device is fitted to said head and without unwiring said line wire and said exchange wire with respect to said contact junction; and

second conducting means secured to said protective device body and extending along the entire length of said protective device body for connecting said second terminal of said protective device to ground referenced voltage through connecting means which are secured to said protective device and to a ground element of said cable head.

4,309,737
CHARGE ROLLER SYSTEM FOR AN ELECTROPHOTOGRAPHIC COPIER

Robert J. Tolmie, Jr., Brookfield Center, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Aug. 27, 1980, Ser. No. 181,935
Int. Cl.[3] G03G 15/044
U.S. Cl. 361—225 7 Claims



1. A charge roller that cooperates with a ground roller in a

charge roller unit to create an electrostatic charge on a photoconductive copy sheet passed through the unit, comprising:

a longitudinally extending metallic body having a pair of stub shafts disposed on opposite longitudinal ends sides thereof, said metallic body having a curvalinear profile at the vicinity of the junction with each of said stub shaft and a conductive, resilient sleeve disposed about said metallic body, said sleeve providing a linear longitudinal surface about its outside perimeter.

4,309,738

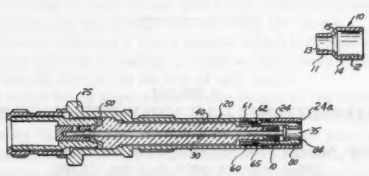
IGNITER PLUG

George F. Mulkins, Bainbridge; Jerome P. Dombrowski, and Gaston R. Isliker, both of Sidney, all of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Apr. 28, 1980, Ser. No. 144,491

Int. Cl.[3] F23Q *3/00*

U.S. Cl. 361—253 4 Claims



1. In combination with an igniter plug of the type having an inner elongated electrode having a front portion and a rear portion; an elongated insulator disposed around at least a portion of the electrode, said insulator having a front portion, a rear portion, and an axial passage extending through said insulator and having a portion of the inner electrode mounted therein; an outer elongated electrode comprising a metal shell mounted on the intermediate elongated insulator and disposed around the electrode and electrically isolated therefrom by the insulator, said metal shell having a rear portion and a front end portion which is arranged to provide a spark gap with the end of the front portion of said electrode; means for mounting the elongated insulator within said metal shell; means for providing a pressure-tight seal between said inner electrode, said elongated insulator and said metal shell; a forward insulator electrically isolating said forward portion of said outer shell from the forward portion of said inner electrode and being separated by an air space from said inner electrode; and means for mounting the forward portion of said inner electrode to the forward portion of said elongated insulator, the improvement wherein said last means comprises:

a metal sleeve telescopically mounted to said inner electrode in the front portion of said insulator passage, said metal sleeve comprising a single piece of metal having a central passage that includes a first passage portion having a large cross sectional area and a second passage portion having a small cross sectional area connected together by a third passage portion, the inside surface of said second passage portion in contact with said electrode extending therethrough and the outside surface of said first passage portion in contact with said insulator passage.

4,309,739

MULTIPLE CONDENSER EQUIPPED WITH COOLING MEANS AND PROCESS FOR ITS MANUFACTURE

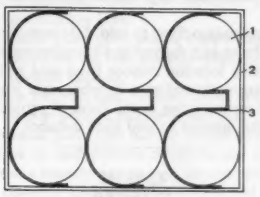
Jacques Schmidt, Montignies-sur-Sambre, Belgium, assignor to Societe Anonyme ASEA JUMET, Belgium

Filed Jul. 16, 1979, Ser. No. 57,897

Claims priority, application European Pat. Off., Jul. 18, 1978, 78200110.1

Int. Cl.[3] H01G *1/08*

U.S. Cl. 361—274 8 Claims



1. A power condenser assembly comprising:

(a) a metal housing having at least two walls,

(b) a plurality of capacitor rolls, and

(c) a plurality of heat conducting sheets, said sheets extending in one direction along substantially the entire length of said rolls, and bent so that each sheet is in contact with at least one-half of the circumference of at least one of said plurality of capacitor rolls so as to form a concave surfaces containing said at least one roll, each sheet having two substantially straight end portions resiliently contacting said at least two walls of said metal housing, said sheets bent in a shape corresponding to one of (1) a double C, one placed above the other, (2) an S, and (3) a double S, whereby said rolls are secured by said sheets.

4,309,740

REMOTE CONTROLLER

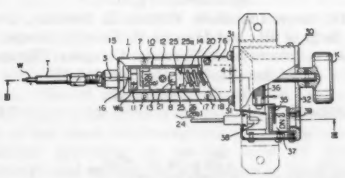
Yasunobu Takata, Odawara, Japan, assignor to Nissan Motor Company, Limited and Ichiko Industries Limited, both of Yokohama, Japan

Filed Sep. 12, 1978, Ser. No. 941,742

Claims priority, application Japan, Sep. 26, 1977, 52-129670[U]

Int. Cl.[3] B60Q *1/06;* F16C *1/10*

U.S. Cl. 362—66 6 Claims



2. A remote controller in a headlight beam adjusting device for a motor vehicle having a body and a headlight, the headlight beam adjusting device having pivotal mounting means for pivotally mounting the headlight on the vehicle body, means for biasing the headlight in one direction of tilt, and cable means connected at one terminal thereof to the mounting means for pulling the headlight in the opposite direction, the remote controller comprising:

a guide case;

a slide member mounted on said guide case for axial movement but against rotation with respect to said guide case, said slide member having a threaded portion;

a rotatable shaft rotatably mounted on said guide case for rotation but against axial movement with respect to said

guide case, said rotatable shaft having a threaded portion in engagement with the threaded portion of said slide member for adjusting the position of said slide member with respect to said guide case;

means for limiting the extent of rotation of said rotatable shaft with respect to said guide case to limit the extent of axial movement of said slide member with respect to said rotatable shaft;

said slide member being of hollow construction, and said limiting means including a stop member fixed to said rotatable shaft and disposed in the interior of said slide member;

first abutment means fixed to said slide member at a location adjacent to an end thereof and cooperating with said stop member at a location remote from said end thereof and cooperating with said stop member, said first and second abutment means being in the form of projections extending into the interior of said slide member.

4,309,741

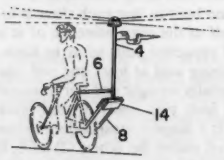
FLASHER

Sidney M. Smith, 3711 Lido Way, Santa Barbara, Calif. 93105

Filed Jan. 25, 1979, Ser. No. 969,830

Int. Cl.³ F21V *33/00*

U.S. Cl. 362—72 **4 Claims**



1. A bicycle light system for night safety riding comprising; a tubular wand; means for mounting said tubular wand to the back of a bicycle; a pair of lamps; a fresnel-lensed housing means for containing said pair of lamps, and for directing light from said lamps substantially horizontally; means mounted on said bicycle, including a waterproof housing for enclosing batteries and for powering said lamps; means for interrupting the light flow to each of said lamps to provide a random flashing output illumination.

4,309,742

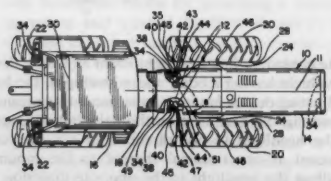
ARTICULATED TRACTOR TIRE ILLUMINATION ARRANGEMENT

Charles H. Holm, Plainfield; William L. Schubert, Downers Grove, both of Ill., and Howard E. Sitorius, Tempe, Ariz., assignors to International Harvester Company, Chicago, Ill.

Filed Jan. 22, 1980, Ser. No. 114,452

Int. Cl.³ B60Q *1/26*

U.S. Cl. 362—78 **7 Claims**



1. In an articulated tractor having a longitudinal centerline and having front and rear sections pivotally connected at an axis of articulation, said rear section supporting an operator's work station, said front section having a body portion for housing an engine extending forward from said axis of articulation and including left and right lower trailing portions of said front section, each of said sections supported by left and right side ground engaging tires mounted for rotation on axles perpendicularly fixed relative to said longitudinal centerline of said tractor, each of said front section tires having an outside diameter defining said tire's profile in elevation and having an inner surface facing adjacent sides of said front section body portion, said front section tires located outboard of said front section body portion wherein said body portion of said front section is pivotally contained between said inner surfaces of said front section tires, wherein the improvement comprises:

a first light mounted on said left lower trailing portion within said profile of said front section tire, said first light having a housing and lens whereby said light's illumination pattern defines an arc B of less than 90°, said first light fixedly mounted wherein said lens is aligned to disburse light transversely across said longitudinal centerline and additionally parallel to said longitudinal centerline of said articulated tractor toward said right side tire forward of said front section axle;

a second light mounted on said right lower trailing portion within said elevation profile of said front section tire having a housing and lens whereby said light's illumination pattern defines an arc A of less than ninety degrees, said second light fixedly mounted wherein said lens is aligned to disburse light transversely across said longitudinal centerline and additionally parallel to said longitudinal centerline toward said left side tire forward of said front section axle.

4,309,743

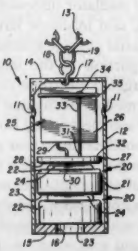
INTERMITTENT LIGHT MOVEMENT JEWELRY PENDANT

Danny W. Martin, 2704 Brookridge La., St. Charles, Mo. 63301

Filed Mar. 20, 1979, Ser. No. 22,191

Int. Cl.³ F21L *15/08*; A44C *7/00*; H01H *35/02*

U.S. Cl. 362—104 **10 Claims**



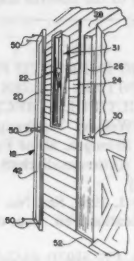
1. In an article of jewelry having intermittent lighting: housing means; battery means contained within said housing means; light means; battery to light circuit means; circuit completing and breaking structural means contained within said housing means as part of said battery to light circuit means; and with said circuit completing and breaking structural means and said light means forming a balanced structure supported on said battery means for tilting movement thereof with movement of the article of jewelry; said balanced structure being in its circuit breaking condition when balanced and in its circuit completing condition when unbalanced by being tilted in any direction; and with tilting of said balanced structure to a circuit completing position on an intermittent basis and lighting of said light means on an intermittent basis induced by movement of the article of jewelry.

4,309,744

ILLUMINATED DECORATION

Salvatore S. Catanese, 25 Almount St., Fitchburg, Mass. 01420

Filed Apr. 18, 1980, Ser. No. 141,634
Int. Cl.[3] F21V 21/04
U.S. Cl. 362—147 1 Claim



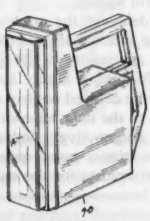
1. An ornamental structure for the exterior wall of a building comprising in combination an opening in said wall, said opening accommodating a conventional closure,
- a recess in the exterior wall only adjacent and parallel to the opening,
- said recess being rectangular and arranged vertically and having a length approximately the same as the opening, said recess being deeper at its upper part than in the lower part thereof,
- and a cover for said recess, said cover being elongated and rectangular and completely covering the recess,
- said cover including a lower portion which is opaque and an upper portion including a window, said cover extending from the bottom to the top of said recess,
- said cover being approximately the height of the opening,
- a box having the general dimensions of the window, said box being inserted and confined in the deeper part of the recess, and a source of illumination in the box, said box having an open side facing and being coextensive with the window.

4,309,745

REFLECTOR

John H. Zelina, Jr., 480 Manchester Rd., Fairview, Pa. 16415

Continuation of Ser. No. 973,522, Dec. 26, 1978, abandoned.
This application May 2, 1980, Ser. No. 146,096
Int. Cl.[3] F21L 7/00
U.S. Cl. 362—186 17 Claims



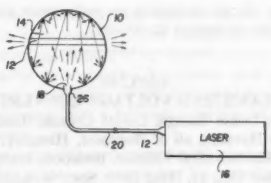
1. A reflector assembly and contact assembly (10) comprising a reflector (11),
- said reflector having a concave reflectory surface on a first side (12) and a second side (13),
- means supporting a lamp (14) on said first side (12),
- a plurality of longitudinally spaced first trusses (15, 16, 17 and 18) on said second side (13),
- a contact support plate (19),
- means on the outer ends of said first trusses (15, 16, 17 and 18) supporting said contact support plate (19) on said reflector,
- a plurality of second brackets (20, 21 and 22) on said second side,
- a printed circuit board (23), support means comprising second support trusses (24, 25 and 26),
- supporting said printed circuit board 23 generally in a plane parallel to said contact plate,
- a first terminal plate (28), a second terminal plate (29) and a third terminal plate (44),
- means (30), supporting said first terminal plate on said contact support plate (19),
- a second terminal plate (29), means supporting said second terminal plate (29) on said contact plate (19) in a plane generally parallel thereto,
- contact means (44) on said contact plate (19) engaging a terminal on side printed circuit board (23),
- said first terminal plate (28) having means to engage a second contact on said printed circuit board (23), whereby power from a battery means may be connected from said terminal plates to said printed circuit board (23).

4,309,746

LASER SEEKER TARGET SIMULATOR

Paul M. Rushworth, Orlando, Fla., assignor to Martin Marietta Corporation, Orlando, Fla.

Filed Sep. 14, 1978, Ser. No. 942,249
Int. Cl.[3] F21K 7/00; G08G 5/00
U.S. Cl. 362—259 39 Claims



1. A diffuser for emitting electromagnetic radiation comprising:
- a three dimensional body having an input in the form of coherent electromagnetic radiation, said body defining a reflective optical cavity illuminated by said input, with a substantial proportion of the area of the cavity walls being covered by a highly reflective diffusion material such that the energy emanating from said input results in a substantially uniform distribution of electromagnetic radiation within said three dimensional body, said body defining an emission surface of at least some angular extent, located in a non-aligned relationship to said input, from which surface, reflected electromagnetic radiation can be emitted and thus provide diffused illumination, wherein essentially all of said input electromagnetic radiation is emitted, said diffuser providing an eye-safe level of illumination through said surface, such illumination being detectable several miles away.

4,309,747

HIGH CURRENT, HIGH VOLTAGE MULTIPLICATION APPARATUS

Chester C. Thompson, East Hills, N.Y., assignor to Radiation Dynamics, Inc., Melville, N.Y.

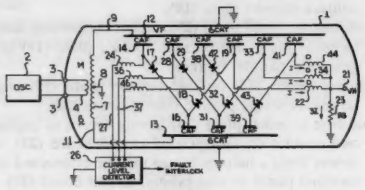
Filed Jul. 7, 1980, Ser. No. 166,655
Int. Cl.[3] H02M 7/10
U.S. Cl. 363—61 10 Claims

1. A high voltage, high current accelerator power supply providing parallel circuits, comprising:
- a pair of elongated electrodes spaced apart and extending generally parallel to one another,

a first plurality of rectifier stages disposed between said electrodes and physically arrayed serially along the elongated extension of said electrodes,

each said rectifier stages comprising a pair of spaced apart electrodes each discposed adjacent a different one of said elongated electrodes and a plurality of series connected rectifiers extending between said spaced apart electrodes,

means connecting every n^{th} rectifier stage in a first series circuit between a low voltage terminal and a high voltage terminal with the diodes of every other stage in said first



circuit being oppositely polled and where n is an integer equal to the number of parallel circuits desired,

means connecting every $(n+1)^{th}$ stage in a second series circuit between said low voltage terminal and said high voltage terminal with the diodes of every other stage in said second circuit being oppositely polled and the rectifiers of the lowest voltage stage having the same polling as the rectifiers of the lowest voltage stage of said first series circuit, and

a resonant circuit including an inductance connected between said elongated electrodes.

4,309,748

DC/DC STABILIZED VOLTAGE CONVERTER UNIT

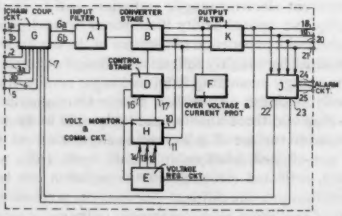
Dezsö Forró; Dezsö Balogh; László Császár; László Tölgyesi, and Endre Havalda, all of Budapest, Hungary, assignors to BHG Hirádastechnikai Vállalat, Budapest, Hungary

Filed Oct. 11, [Hu] 1979, Ser. No. 83,594

Claims priority, application Hungary, Nov. 16, 1978, HI 499

Int. Cl.³ H02M *3/00*

U.S. Cl. 363—65 **5 Claims**



1. In a dc/dc stabilized voltage converting unit having a series circuit including an input filter, a converter stage having a control input and an output filter, the improvement comprising: a control stage having an output connected to the control input; a voltage regulating circuit receptive of an output of the output filter and having an output applied to the control stage; an anti-overvoltage and anti-overcurrent stage receptive of an output of the converter stage and having an output applied to the control stage; a voltage converter chain coupling circuit for effecting the linking of units in a chain; an internal monitoring and commutating circuit connected between the voltage regulating circuit and the control stage for surveying the outputs of the converter stage; a visually and electrically signalling alarm circuit receptive of the outputs of the output filter and having the outputs thereof applied to the chain coupling circuit; and wherein the chain coupling circuit includes a first input for linking to one pole of a power supply source, a second input for linking to the other pole of a power supply source, a coupling terminal connectable to said one pole of the power supply source, a third input for connecting to the coupling terminal of the next chain coupling circuit in the chain, first and second outputs connected to the input filter and a third output connected to the control stage.

4,309,749

CIRCUIT HAVING IMPROVED FIRING ANGLE SYMMETRY FOR IGNITION PULSES IN THE CONTROL OF A MULTIPULSE RECTIFIER

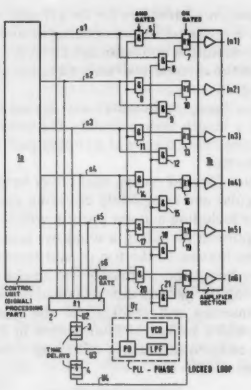
Manfred Weibelzahl, Weiher; Wolfgang Meusel, and Kurt Schaumman, both of Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 1, 1980, Ser. No. 145,491

Claims priority, application Fed. Rep. of Germany, May 13, 1979, 2922249

Int. Cl.³ H02P *13/24*

U.S. Cl. 363—87 **7 Claims**



1. In a control circuit for supplying firing pulses to a multipulse rectifier by the amplification of ignition control signals, the start of each of which is determined by comparing the periodic reference voltage output of an oscillator controlled by a clocking AC voltage with a DC control voltage, the improvement comprising:

(a) means for forming a first control signal sequence from the ignition control signals;

(b) means for delaying the control signal sequence by a period of time substantially corresponding to the greatest possible time asymmetry of the ignition control signals;

(c) means for forming a highly accurate trigger pulse sequence from the delayed control signal sequence which is phase-locked to the delayed control signal sequence; and

(d) means for conjunctively linking the ignition control signals to the trigger pulse sequence to form corrected ignition control pulses for the multipulse rectifier.

4,309,750

INVERTER DEVICE

Hidehiko Sugimoto, Nagoya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 2, 1979, Ser. No. 576

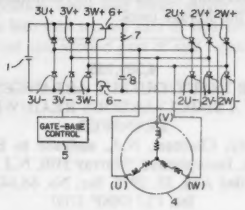
Claims priority, application Japan, Jan. 23, 1978, 53-5944; Feb. 23, 1978, 53-19999

Int. Cl.³ H02M *7/515*

U.S. Cl. 363—138 **15 Claims**

1. An inverter device which comprises a plurality of groups of serially connected diodes which are connected in parallel

between positive and negative sides of a first DC power source to apply a voltage from said first DC power source; first and second switching elements connected to common terminals of the groups of the serially connected diodes; a resistor and a second DC power source connected in series and being in parallel with said switching elements; a plurality of groups of



serially connected thyristors which are connected in parallel to apply a forward voltage from said first DC power source, said thyristors being turned-off by a reverse voltage from said second DC power source; and a load side output terminal as a joint connecting said groups of thyristors and said groups of diodes at the middle point in the serial connection, whereby said thyristors and said switching elements are controlled.

4,309,751

METHOD AND APPARATUS FOR CONTROLLING CURRENT TYPE INVERTERS

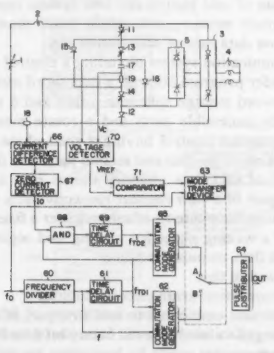
Chihiro Okado, Fuchu, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 26, 1979, Ser. No. 106,844

Claims priority, application Japan, Dec. 25, 1978, 53-158506; Feb. 2, 1979, 54-11073

Int. Cl.³ H02M *7/515*

U.S. Cl. 363—138 **4 Claims**



1. A method of controlling an inverter device comprising an inverter bridge connected across a direct current source, an auxiliary thyristor bridge connected to AC output terminals of said inverter bridge, a condenser connected across cathode and anode electrodes of said auxiliary thyristor bridge which acts as a first switching circuit for charging and discharging said condenser, and a second switching circuit for connecting cathode and anode electrodes of said auxiliary thyristor bridge across said DC source, said method comprising the steps of comparing voltage of said condenser with a reference voltage, controlling said respective switching circuits so as to effect commutations of said inverter bridge in a direction to charge said condenser when said condenser voltage is lower than said reference voltage, setting a predetermined delay time corresponding to a commutation initial delay for said inverter bridge at the time of charging said condenser so that said commutation will be delayed during discharge of said condenser, controlling said respective switching circuit, so as to effect commutation of said inverter bridge in a direction to discharge said condenser when said condenser voltage is higher than said reference voltage thereby controlling said condenser voltage in accordance with said reference voltage.

4,309,752

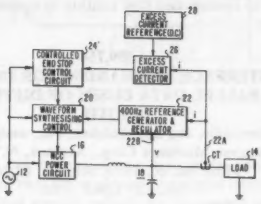
CYCLOCONVERTER APPARATUS WITH CONTROLLABLE END STOP FIRING PULSE CONTROL MEANS

Eric J. Stacey, Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 19, 1979, Ser. No. 95,803

Int. Cl.³ H02P *13/30*

U.S. Cl. 363—160 **6 Claims**



1. Cycloconverter apparatus comprising:

a naturally commutated power circuit for connection between a voltage source of varying frequency and a load to be supplied at a constant frequency, said power circuit comprising a plurality of thyristor type power switches;

means for generating a reference voltage at said constant frequency;

means for controlling the sequential application of firing pulses to said power switches in accordance with said reference voltage;

end stop firing pulse control means for constraining the occurrence of a firing pulse to a given power switch in accordance with load current, source voltage and source frequency.

4,309,753

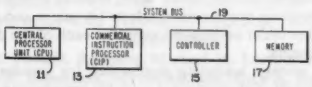
APPARATUS AND METHOD FOR NEXT ADDRESS GENERATION IN A DATA PROCESSING SYSTEM

Virendra S. Negi, Pepperell, and Arthur Peters, Sudbury, both of Mass., assignors to Honeywell Information System Inc., Waltham, Mass.

Filed Jan. 3, 1979, Ser. No. 734

Int. Cl.³ G06F *9/26*

U.S. Cl. 364—200 **14 Claims**



1. Apparatus for effecting subroutining in a data processing system, said apparatus comprising:

A. logic means for performing logical operations on input data, including the performing of a first routine and a second routine for processing said input data;

B. storage means having a plurality of control instructions stored therein, said control instructions for enabling said logic means to perform said logical operations in a manner determined by said instructions;

C. means for addressing said storage means to access said stored control instructions;

D. means, included in said logic means, for executing said first routine in response to said accessed control instructions;

E. means for suspending said execution of said first routine in order to execute said second routine;

F. save means for storing an address associated with the last instruction of said first routine which was executed at the time of the suspension of the execution of said first routine, said address including a plurality of bits, each bit having either a first state or a second state; and

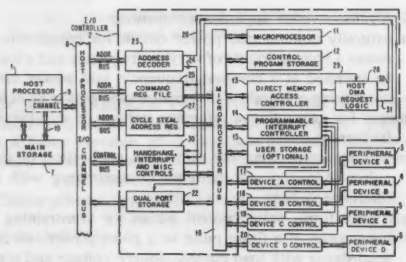
G. means for restoring the operation of said first routine upon termination of the execution of said second routine including inverting means for inverting the state of one of said bits of said address stored in said save means to supply said means for addressing with an entry address, whereby said means for addressing accesses the instruction of said first routine which next follows said last instruction in order to restore said first routine to operation.

4,309,754

DATA INTERFACE MECHANISM FOR INTERFACING BIT-PARALLEL DATA BUSES OF DIFFERENT BIT WIDTH

John M. Dinwiddie, Jr., Loxahatchee, Fla., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Jul. 30, 1979, Ser. No. 62,261
Int. Cl.[3] G06F *3/00*
U.S. Cl. 364—200 9 Claims



1. A data interface mechanism for interfacing an M-byte data bus with an N-byte data bus, where M is a multiple of N, and comprising:

a number of random access storage units coupled to the M-byte and N-byte data buses, the number of such storage units being equal to the ratio of M to N and each such storage unit having a width of N bytes;

a first storage accessing mechanism for accessing these storage units one at a time in a rotating manner for transferring N-byte data segments between the N-byte data bus and different ones of the storage units, this first storage accessing mechanism utilizing different address ranges for the different storage units, such address ranges having corresponding lower order address bit values and a different higher order address bit value for each of the different storage units;

a second storage accessing mechanism for simultaneously accessing all of these storage units for transferring M-byte data segments between the M-byte data bus and the storage units, this second storage accessing mechanism utilizing a further address range which is different from those used by the first storage accessing mechanism, such further address range having lower order address bit values which correspond to those used by the first storage accessing mechanism and a higher order address bit value which is different from those used by the first storage accessing mechanism;

common addressing circuitry for supplying the lower order address bits from the first and second storage accessing mechanisms to all of the storage units;

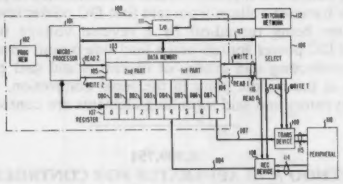
and decoder circuitry for receiving the higher order address bits and responsive to the higher order address bit values of the first storage accessing mechanism for activating different individual ones of the storage units and responsive to the higher order address bit values of the second storage accessing mechanism for simultaneously activating all of the storage units.

4,309,755

COMPUTER INPUT/OUTPUT ARRANGEMENT FOR ENABLING A SIMULTANEOUS READ/WRITE DATA TRANSFER

Henry A. Lanty, Chatham, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 22, 1979, Ser. No. 68,643
Int. Cl.[3] G06F *3/00*
U.S. Cl. 364—200 13 Claims



12. A data communication arrangement for interfacing a communication system with a burst data operated key telephone station set which simultaneously transmits serial binary bit status information to and receives serial binary bit control signals from said communication system, said system having a reading and writing data rate faster than the average data rate of said station set but incapable of reading and writing at said burst data rate of said station set, said system capable of performing a rotate memory instruction faster than said corresponding burst data rate of said station set,

said communication system including a control means operating under program control, a data word memory means having word storage split into a first and a second independently accessible parts and a rotate means operable under program control having a read phase for reading the contents of the first and second parts of a data memory location of said data memory means into a first and a second part of a shift register respectively, a rotate phase for rotating the contents of said register a fixed number of bits and a writing phase for writing said register contents into said data memory location

characterized in that

said communication arrangement includes

a receive device connected to said first part of said register and arranged to receive serial binary bit data from said key station set;

a transmit device connected to said first part of said register and arranged to transmit serial binary bit data to said key station set;

a read selecting means operable during a read phase of a rotate means operation on a preselected data memory location for selectively reading into said first part of said register a data bit from said receive device rather than reading a data bit from a first part of said preselected data memory location while said rotate means simultaneously reads data from a second part of said preselected data memory location into said second part of said register;

said rotate means operative during said rotate phase of said preselected rotate means operation for rotating the received data bit located in said first part of said register into said second part of said register while simultaneously

rotating a transmit data bit from said second part of said register into said first part of said register and

a write selecting means operable during said write phase of said preselected rotate means operation for selectively writing said transmit data bit from said first part of said register into said transmit device rather than writing said transmit bit into said first part of said preselected data memory location while said rotate means simultaneously writes data into said second part of said preselected data location from said second part of said register.

4,309,756

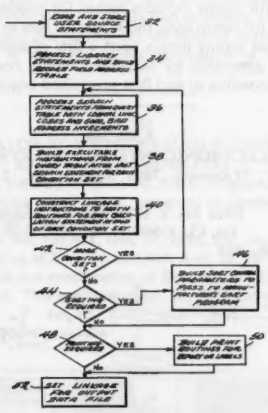
METHOD OF AUTOMATICALLY EVALUATING SOURCE LANGUAGE LOGIC CONDITION SETS AND OF COMPILING MACHINE EXECUTABLE INSTRUCTIONS DIRECTLY THEREFROM

Robert I. Beckler, 654 Kennebec Ave., Takoma Park, Md. 20012

Continuation of Ser. No. 116,160, Feb. 17, 1971, abandoned. This application Nov. 28, 1973, Ser. No. 419,496

Int. Cl.³ G06F *3/00*

U.S. Cl. 364—300 **24 Claims**



1. A method to be carried out within a digital computer under programmed control for automatically evaluating a logic condition set composed of query statements connected by logical connectors and expressed in high level computer program source statements and for automatically compiling a compact and efficient set of machine executable instructions corresponding thereto, said method comprising the steps of:

constructing an array of logical linkage codes having at least one entry for each query statement in the condition set with the value of successive entries in the array being assigned in dependence upon the particular type of logical connector adjoining the respectively associated query statement,

scanning the resulting array of logical linkage codes in a predetermined order and comparing the values of adjacent entries to determine relative ordering therebetween, and

computing the necessary addresses for insertion in branch instructions included within said set of machine instructions in dependence upon said relative ordering.

4,309,757

METHOD FOR CLASSIFICATION OF SIGNALS BY COMPARISON WITH AN AUTOMATICALLY DETERMINED THRESHOLD

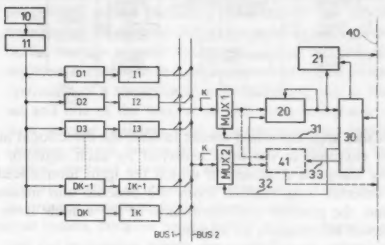
Raymond Frey, and Rudolf Voellmy, both of Zürich, Switzerland, assignors to Contraves Limited, Zürich, Switzerland

Filed Dec. 3, 1979, Ser. No. 99,646

Claims priority, application Switzerland, Dec. 19, 1978, 12907/78

Int. Cl.³ G06F *15/42*

U.S. Cl. 364—416 **10 Claims**



1. A method for determining a separation threshold for separating at least two signal classes in a signal quantity, composed of individual signals, which are converted by a feeler element into electrical signals and stored in a storage, comprising the steps of:

(a) ordering the stored signal quantities which are present for analysis in storages organized into K-channels so as to form a histogram;

(b) determining within a coherent number of N-channels of the histogram by mutual comparison of the signal values stored in the N-channels or values derived therefrom one of such channels whose signal value is smallest;

(c) thereafter storing a characteristic value correlated to the thus determined channel as the separation threshold within the histogram so that there can be evaluated different signal values to different sides of such separation threshold;

(d) comparing the signal value of the determined channel with each of the signal values of a multiplicity of P_L-channels directly following one side of the determined channel and with each of the signal values of a multiplicity of P_R-channels directly following the other side of the determined channel; and

(e) if during step (d) above there prevails at least a signal value in subsequent P_L-channels or P_R-channels which is smaller than the signal value of the determined channel repeating step (b) above with a different selection of N-channels until the signal value of the determined channel is the smallest.

4,309,758

DRIVERLESS VEHICLE AUTOGUIDED BY LIGHT SIGNALS AND THREE NON-DIRECTIONAL DETECTORS

James R. Halsall, Runcorn; Michael H. Larcombe, Coventry; James R. Robertson, Northwich, and Mark A. Rogers, Chester, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Aug. 1, 1979, Ser. No. 62,698

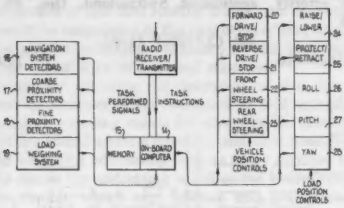
Claims priority, application United Kingdom, Aug. 1, 1978, 31849/78

Int. Cl.³ G06F *15/20*; B62D *11/04*

U.S. Cl. 364—424 **11 Claims**

1. A vehicle having means for determining its position and orientation with reference to a final station, in combination with a beacon located at said fixed station; the beacon having a light source for emitting the light in diverging directions over

an area in which the vehicle moves, and means for encoding the light with directional information wherein the light emitted from the beacon in one direction is detectably different from that emitted in any other direction; the vehicle having at least three triangulated light-sensitive detectors mounted to intercept light from the beacon at all orientations of the vehicle



within said area, decoding means to read the directional information encoded in the light received by each detector and thereby learn the direction in which the light intercepted by each detector was emitted from the beacon, and means to calculate the position and orientation of the vehicle from the directional information so learned.

4,309,759

ELECTRONIC ENGINE CONTROL APPARATUS

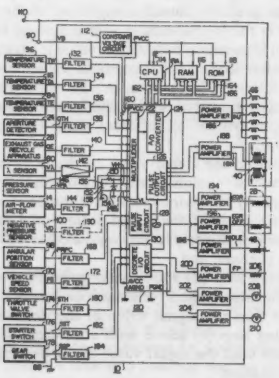
Hiroastu Tokuda; Akihiko Konno, and Seiji Suda, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

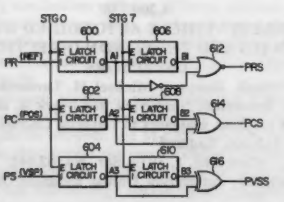
Filed Oct. 18, 1978, Ser. No. 952,279

Claims priority, application Japan, Oct. 19, 1977, 52-125970

Int. Cl.[3] F02D *5/02;* **F02P** *5/08;* **F02B** *3/02*

U.S. Cl. 364—431.05 **79 Claims**





46. For use in a processor-controlled apparatus for controlling the operation of an internal combustion engine having an output crankshaft drawn by mechanical energy converted from heat energy which is released by the combustion of fuel, said engine including at least fuel supply means for supplying fuel to said engine and ignition means for controlling the ignition of fuel supplied to the engine in accordance with signals produced by sensors representative of operating conditions of the engine, said sensors including rotation sensor means for generating pulses in accordance with said output crankshaft;

a control apparatus comprising, in combination:

first means for generating an engine control timing signal pattern containing timing pulses occurring at predetermined intervals through which operational events of said engine are controlled,

second means for storing engine control data,

third means, coupled to said first means, for generating respective engine timing codes the value of which are selectively modified by said engine control timing signal pattern,

fourth means, coupled to said second and third means, for comparing respective ones of said engine timing codes with respective engine control data and producing respective output signals when said respective engine timing codes define a prescribed relationship with respect to said engine control data,

fifth means, coupled to said fourth means, for producing respective control signals to be supplied to said fuel supply means and said ignition control means in response to respective output signals produced by said fourth means, and wherein

said second means includes means for storing first prescribed engine control data representative of a prescribed angular rotation of said crankshaft between a predetermined angular position of said crankshaft and the angular position of said crankshaft at which said rotation sensor means produces a prescribed reference pulse, and

said fourth means includes means for producing an output signal for controlling the supply of fuel to said engine by said fuel supply means upon a first of said engine timing codes generated by said third means reaching a value corresponding to said first prescribed engine control data.

4,309,760

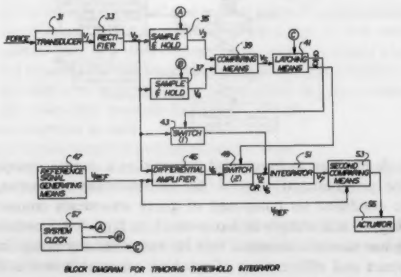
ELECTRONIC INTEGRATING SYSTEM

Nicholas F. D'Antonio, 7695 Admiral Dr., Liverpool, N.Y. 13088

Filed Jul. 9, 1979, Ser. No. 56,096

Int. Cl.[3] G06G *7/18;* **A63C** *9/08*

U.S. Cl. 364—835 **15 Claims**



BLOCK DIAGRAM FOR TRACKING THRESHOLD INTEGRATOR

13. In a safety ski binding having a release means actuable for placing the binding in a releasing condition from a latching condition, a system for actuating said release means, said system comprising:

transducing means for generating electrical input signals corresponding to forces applied to the ski binding;

first and second sample and hold means electrically connected to said transducing means for alternatively receiving and storing said input signals;

first comparing means electrically connected to each of said sample and hold means for periodically comparing the

signals stored in said sample and hold means for generating first comparison signals when the relative values of the signals received from said sample and hold means indicate the input signals are increasing, and second comparison signals when the relative values of the signals received from said sample and hold means indicate the input signals are decreasing;

reference signals generating means for establishing a reference value corresponding to the value of force at which the binding is to be placed in the releasing condition;

difference means electrically connected to said reference signal generating means and to said transducing means for comparing said input signals with said reference value and for generating a differential signal reflective of the difference between the values of said input signals and said reference value;

integrating means electrically connected to each of said transducing means and said difference means for selectively generating an integrated signal corresponding to the integral over a predetermined period of time of the selected one of said input signals and said differential signals;

switching means electrically connected to said first comparing means, to said difference means and to said integrating means, for enabling the transmission of said input signals to said integrating means in response to the generation of a first comparison signal and for enabling the transmission of said differential signal in response to the generation of a second comparison signal;

second comparing means electrically connected to said integrating means and to said reference signal generating means for comparing said integrated signal with said reference value and for generating a releasing signal when said integrated signal exceeds said reference value; and

actuating means for placing the ski binding in the releasing condition in response to the generation of a releasing signal.

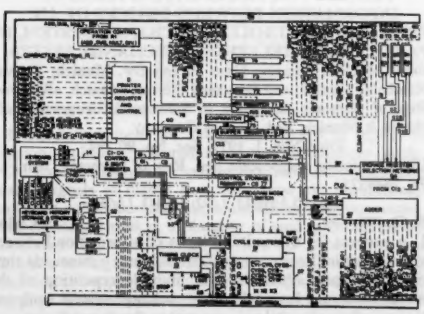
4,309,761
CALCULATOR FOR EVALUATING NUMERICAL ANSWERS TO PROBLEMS

Roy W. Reach, Sudbury; William M. Kahn, Brighton, and David Shapiro, Lincoln, all of Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 731,611, Oct. 31, 1976, Pat. No. 4,198,684, which is a division of Ser. No. 390,645, Aug. 22, 1973, Pat. No. 3,996,562, which is a continuation of Ser. No. 378,221, Jun. 26, 1964, abandoned. This application Jul. 26, 1979, Ser. No. 60,950

Int. Cl.³ G06F *3/023*

U.S. Cl. 364—900 **7 Claims**



1. A calculator for processing digital operand signals, comprising:

keyboard input means including a first set of keys for entering digital operand signals to be processed and further including a second set of keys for entering digital operator signals determining the manner in which the digital operand signals are to be processed;

buffer storage register means, coupled to the keyboard input means, for temporarily storing digital operand signals entered by the keyboard input means;

a plurality of data storage registers, coupled to the buffer storage register means, for storing digital operand signals transferred thereto from the buffer storage register means;

processing means, coupled to the keyboard input means, the buffer storage register means and the data storage registers, for processing entered digital operand signals in accordance with entered digital operator signals, said processing means including first means for selectively transferring an entered digital operand signal between the buffer storage register means and one of the data storage registers in response to a digital operator signal entered by operation of a sequence of keys including one of the first set and one of the second set and designating one of the data storage registers, said processing means further including second means for selectively combining entered digital operand signals in accordance with other digital operator signals entered by selected keys of the second set to provide resultant digital signals; and

output means, coupled to the buffer storage register means and the processing means, for providing an output indication of the resultant digital signals.

4,309,762
SEMICONDUCTOR MEMORY APPARATUS

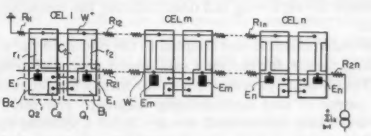
Kazuhiro Toyoda, Yokohama, Japan, assignor to Fujitsu Limited, Japan

Filed Oct. 22, 1979, Ser. No. 87,390

Claims priority, application Japan, Oct. 30, 1978, 53-133386

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—179 **8 Claims**



1. A semiconductor memory apparatus, having memory cells which are connected to first and second word lines, comprising:

first and second transistors, included in each of the memory cells, for supplying a hold current, each of said first and second transistors having an emitter region which determines said hold current, and said first and second transistors of each of the memory cells having emitter regions which have an area different from the area of the emitter regions of the first and second transistors of the other memory cells so that the hold currents of the memory cells are uniformly distributed.

4,309,763
DIGITAL SONOBUOY

Paul R. Passmore, Dallas, Tex., and Elio Poggiagliomi, London, England, assignors to Refraction Technology, Inc., Dallas and Geoquest International Ltd., Houston, both of, Tex.

Continuation-in-part of Ser. No. 773,528, Mar. 2, 1977, abandoned. This application May 8, 1978, Ser. No. 903,876

Int. Cl.³ G01V *1/22, 1/38*

U.S. Cl. 367—3 **5 Claims**

1. A marine seismic exploration system, comprising:

(1) a sonobuoy for receiving seismic information from a plurality of hydrophones comprising:

(a) means for generating digital data representative of said seismic information, in a pulse waveform, said waveform

including an indicator signifying the occurrence of a digital word;

(b) means for radio transmitting said digital data by frequency-shift keying, including

(i) means for processing the digital data to generate an amplitude limited waveform for the radio transmission, including,

means for adjusting the peak to peak amplitude of said limited waveform,

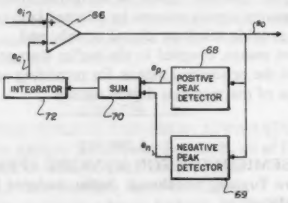
means for adjusting the offset of the waveform with respect to a base line, and

means for low pass filtering the amplitude limited waveform,

(ii) an inductance-capacitance oscillator for generating an output of a first frequency,

(iii) means for modulating said first frequency output with the output of the low pass filtering means,

(iv) crystal oscillator means for generating an output signal at a second, higher frequency, and



(v) means for mixing the outputs of the oscillator means and the modulating means, whereby the output of the mixing means includes a carrier modulated by the amplitude limited, low pass filtered digital data;

(2) means for receiving and demodulating the transmitted data; and

(3) decoder means direct coupled to the output of the demodulating means, for deriving said digital data, including:

(a) automatic symmetry corrector means for processing the output of said demodulating means to provide a digital waveform constrained to vary about a selected base line,

(b) means responsive to said digital data pulse waveform for generating a clock pulse, and

(c) means responsive to said indicator for generating a word synchronization pulse,

whereby said digital data may be transmitted and accurately decoded over a long distance, with relatively low band width and power consumption.

4,309,764

TECHNIQUE FOR INCREASING THE RAIN MARGIN OF A SATELLITE COMMUNICATION SYSTEM

Anthony Acampora, Freehold, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 22, 1979, Ser. No. 51,022

Int. Cl.[3] H04J *3/16*

U.S. Cl. 370—83 **10 Claims**

1. In a TDMA satellite communication system comprising a satellite and a plurality of remote, spaced-apart, ground stations which communicate with one another via the satellite using message bursts in assigned time slots of a frame sequence, a transmitter capable of launching one or more message bursts during the frame sequence to each destination ground station where each message burst includes preamble and data information, the transmitter comprising:

an input capable of receiving the data information and a certain portion of the preamble information associated with each message burst to be transmitted to each destination ground station;

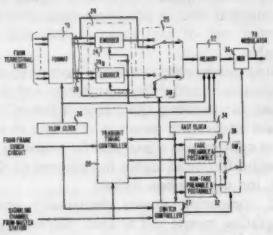
first means (32) capable of generating the remaining portion of the preamble information associated with each message burst to be transmitted; and

means (36) capable of appropriately multiplexing the information both received at the input and generated by the first means for generating the remaining portion of the preamble information to form each message burst for transmission to a destination ground station

CHARACTERIZED IN THAT

the transmitter further comprises:

control means (27) capable of generating a first control signal in response to a nonfade condition existing in transmissions between the transmitter and the destination ground station of a message burst to be transmitted, and a second control signal in response to a detected fade condition occurring in transmissions between the transmitter and a destination ground station of a message burst to be transmitted;



an encoder (24) capable of encoding an input digital signal into a redundancy encoded output signal;

second means (30) capable of generating the remaining portion of the preamble information which is an extended version of the remaining portion of the preamble information generated by the first means; and

switching means (25, 38) capable of coupling both the input to the transmitter and said first means to the multiplexing means in response to a first control signal from said control means and capable of coupling both said encoder into the path between the input to the transmitter and the multiplexing means, and said second means to the multiplexing means in response to a second control signal from the control means for forming a message burst at the output of the multiplexing means.

4,309,765

PROCESS FOR TRANSMITTING ITEMS OF INFORMATION BETWEEN DEVICES OF AN INDIRECTLY CONTROLLED EXCHANGE SYSTEM, IN PARTICULAR A TELEPHONE EXCHANGE SYSTEM

Helmut Müeller, Planegg; Hans P. von Ow, Munich; Thomas Rambold, Munich, and Bernhard Werres, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 1, 1979, Ser. No. 90,294

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1978, 2849371

Int. Cl.[3] H04J *3/02*; H04Q *11/04*

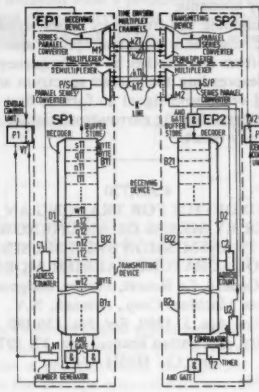
U.S. Cl. 370—99 **9 Claims**

1. A process for transmitting items of information between devices of an indirectly controlled exchange system via time division multiplex channels with multiple repetition of the items, in particular for a telephone exchange system equipped with time channel couplers, comprising the steps of:

in a transmitting device, forming items of information each comprising a plurality of bytes including a number byte which identifies the relevant item of information;

storing each item byte-wise into storage cells of a buffer store and outputting the items byte-wise in a regular cyclic operation;

transmitting the items of information from the transmitting device to a receiving device;
receiving the items of information in the receiving device;



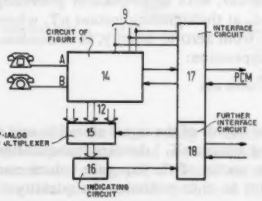
storing received items of information in a buffer store on the basis that bytes belonging to new items of information are stored only once; and
outputting the new items of information after a complete recording cycle.

4,309,766

ARRANGEMENT FOR SUBSCRIBER CIRCUITS UTILIZING DIGITAL TIME DIVISION MULTIPLEX TELECOMMUNICATION INSTALLATIONS AND PARTICULARLY FOR PCM LOCAL EXCHANGES

Robert Lechner, Otterfing, and Hermann Monat, Wessling, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 30, 1979, Ser. No. 71,116
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1978, 2842098
Int. Cl.³ H04J *3/12*
U.S. Cl. 370—110 **4 Claims**



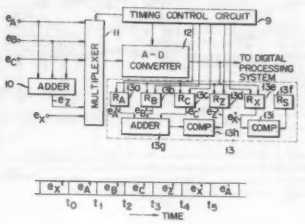
1. An arrangement for subscriber circuits of digital time division multiplex telecommunication installations such as PCM local exchanges for connecting subscriber lines having analog signals to digital switching networks comprising, at least two subscriber stations, a subscriber line connected to each subscriber station, a plurality of analog circuit elements associated with each subscriber line for processing analog signals, a coding and decoding time division multiplex circuit receiving and supplying digital and analog signals and converting them into analog and digital signals connected to at least two subscriber lines, with a number of subscriber lines connected to said coding and decoding circuit being limited by the product of the scanning frequency which forms the time base for the time division multiplex circuit and the conversion and transfer time which is necessary for the total and decoding in said time division multiplex circuit, an indicating circuit connected to said analog circuit elements and translating control signals on the subscriber lines into indication signals, digital interface circuits connected to said coding and decoding time division multiplex circuit, and digital trunk circuits connected to said digital interface circuits.

4,309,767

MONITOR SYSTEM FOR A DIGITAL SIGNAL

Fumio Andow, Hachioji; Ryotaro Kondow, Fuchu, and Eiichi Okamoto, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 21, 1979, Ser. No. 68,334
Claims priority, application Japan, Aug. 31, 1978, 53-106383
Int. Cl.³ G06F *11/30*
U.S. Cl. 371—24 **7 Claims**



1. A monitor system connected to a digital data processing system, which comprises:
an analog arithmetic operation device for arithmetically processing a plurality of unknown analog electric quantity signals;
a multiplexer which is supplied with an output signal from said arithmetic operation device, said plural analog electric quantity signals and an error detection signal denoting a known prescribed electric quantity, and generates output signals corresponding to the plural analog electric quantity signals, the output signal from said arithmetic operation device and the error detection signal successively in a certain prescribed order;
an analog-digital converter for converting output analog signals from the multiplexer into digital signals and for delivering the digital signals to said digital data processing system; and
a monitor connected to receive the output of the A-D converter and including a digital arithmetic operation device for performing an arithmetic processing corresponding to that of the analog arithmetic operation device, a first comparator for comparing the output of the digital arithmetic operation device and an A-D converted output signal of said analog arithmetic operation device, a discrete register for storing a digital signal of a prescribed digital value, and a second comparator for comparing a digital error detection signal obtained through the A-D converter and the output of the discrete register.

4,309,768

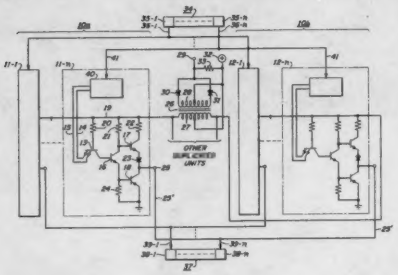
MISMATCH DETECTION CIRCUIT FOR DUPLICATED LOGIC UNITS

Cyrus F. Ault, Wheaton, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 31, 1979, Ser. No. 108,660
Int. Cl.³ G06F *11/16*
U.S. Cl. 371—68 **15 Claims**

1. A detection circuit for detecting a mismatch between the output signals of a first and a second plurality of logic units (**11-1**, . . . **11-n**; **12-1** . . . **12-n**), each of the logic units of said first plurality of logic units (**11-1**, . . . **11-n**) having a corresponding logic unit in said second plurality of logic units (**12-1**, . . . **12-n**), each of said logic units comprising a logic circuit for perform-

ing a predetermined logic operation, an output circuit stage comprising an output terminal for supplying said output signals, a power supply circuit, and switch means controlled responsive to said logic operation for selectively connecting said output terminal to either said power supply circuit or ground, said detection circuit being characterized in circuit means for connecting the power supply circuits of the output circuit stages of the logic units of said first and second plurality of logic units (**11-1**, . . . **11-n**; **12-1**, . . . **12-n**) to a power supply (**32**), connecting circuit means for connecting the output terminals of the output circuit stages of the logic units of said first



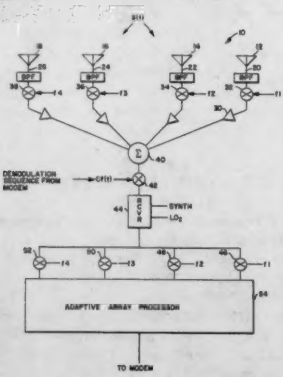
plurality of logic units (**11-1**, . . . **11-n**) to the output terminals of the output circuit stages of the corresponding logic units of said second plurality of logic units (**12-1**, . . . **12-n**) to complete in said logic units a circuit path including said power supply circuit and said switch means when controlled to connect said output terminal to said power supply circuit of one logic unit and said switch means of the other corresponding logic unit when controlled to connect said output terminal to ground, and being further characterized in detection circuit means connected across said circuit means for detecting current flow in each of said circuit paths and for generating an error signal indicative of said current flow.

4,309,769

METHOD AND APPARATUS FOR PROCESSING SPREAD SPECTRUM SIGNALS

Taliaferro H. Taylor, Jr., Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Feb. 25, 1980, Ser. No. 124,261
Int. Cl.³ H01Q *3/26*; H04K *1/04*; H02L *27/30*
U.S. Cl. 375—1 **32 Claims**



1. A spread spectrum receiving system comprising:

an antenna array having a plurality of elements for receiving a spread spectrum signal;

means for frequency offsetting the spread spectrum signal in each array element from spread spectrum signals in the other array elements;

means for summing the frequency offset signals to form a broadband composite signal of spread spectrum signals separated from one another by the frequency offsets; and

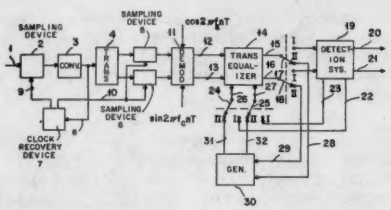
means for despreading the spread spectrum signals of the broadband composite signal to form a first narrowband composite signal having narrowband signals separated by the frequency offset.

4,309,770

METHOD AND DEVICE FOR TRAINING AN ADAPTIVE EQUALIZER BY MEANS OF AN UNKNOWN DATA SIGNAL IN A TRANSMISSION SYSTEM USING DOUBLE SIDEBAND-QUADRATURE CARRIER MODULATION

Dominique N. Godard, Le Rouret, France, assignor to International Business Machines Corp., Armonk, N.Y.

Filed Apr. 1, 1980, Ser. No. 136,195
Claims priority, application France, Apr. 17, 1979, 79 10422
Int. Cl.³ H03H *7/40*
U.S. Cl. 375—14 **14 Claims**



1. In a data receiver for a synchronous data transmission system wherein the data symbols are transmitted at the signaling rate 1/T, using a double sideband-quadrature carrier modulation technique, said receiver including an adaptive complex equalizer having several tap gains, a method of training said equalizer, characterized in that it includes the steps of:

applying the signal received from the transmission channel to said equalizer, with said equalizer providing an equalized signal z_n at the signaling instant nT, where the value of n ranges from zero to infinity, in accordance with the following expression:

$$z_n = y'C$$

where y_n is the vector of the signal stored in said equalizer at the signaling instant nT, ′ denotes transposition of vector y_n, C is the vector of the tap gain values; and adjusting said tap gains so as to minimize the quantity

$$D^{(p)} = E(|z_n|^p - R)^2$$

where E denotes the mathematical expectation which can be read as "the average value of,"

R is a positive real constant,

p is a positive integer, and

|| denotes the modulus.

4,309,771

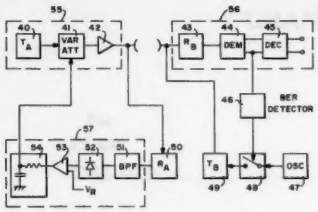
DIGITAL RADIO TRANSMISSION SYSTEM

Mark W. Wilkens, Palo Alto, Calif., assignor to Farinon Corporation, San Mateo, Calif.

Filed Jul. 2, 1979, Ser. No. 53,961
Int. Cl.³ H03K *13/34*
U.S. Cl. 375—58 **8 Claims**

1. In a digital radio transmission system, the method comprising the steps of transmitting a digital signal having a first

signal level from a first location to a second remote location, monitoring at said second location a measure of the bit error rate of the received digital signal and changing the level of said transmitted digital signal when the received monitored bit error rate is different from a predetermined value, sampling at predetermined time intervals the demodulated digital signal and generating a second control signal when the sampled

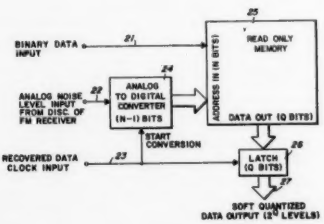


values of the received digital signal indicate a degradation of the received signal, determining whether second control signal occurs within a predetermined time period which is short compared to the average interval between data errors at said bit error rate, and generating said first control signal when said second control signal occurs within said predetermined time period.

4,309,772
SOFT QUANTIZER FOR FM RADIO BINARY DIGITAL SIGNALING

Kevin L. Kloker, Rolling Meadows, Ill., and James A. Pautler, St. Louis, Mo., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 24, 1980, Ser. No. 114,851
Int. Cl.³ H03K *6/04*
U.S. Cl. 375—76 **8 Claims**



1. A soft quantizer for converting a demodulated signal, including recovered digital data and an analog noise signal, from a discriminator output of a digital receiver employing non-linear demodulation, to soft quantized digital values reflecting the numerical weight of the decoded digital data, based upon the noise energy of the received demodulated signal, comprising:

digital detector means to convert the recovered digital data from the discriminator to hard quantized digital data on a detector output line;

analog to digital converter means for filtering the analog noise signal from the recovered digital data, converting the analog noise signal to a digital representation and supplying said digital representation as an output signal;

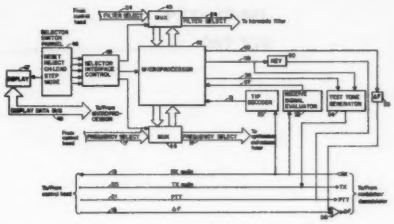
addressable memory means having a plurality of addressable locations and from which previously stored predetermined numerical weights may be retrieved from one of the addressable locations as selected by the digital output signal from the analog to digital converter means; and

combiner means for combining the hard quantized digital data from the output of the digital detector with the numerical weights read from said addressable memory means to generate a soft quantized digital value reflecting the numerical weight of the detected data, based upon the level of the noise energy in the digital receiver.

4,309,773
APPARATUS AND METHOD FOR RADIO CHANNEL SELECTION

George B. Johnson, La Jolla, and Gerald A. Clapp, San Diego, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 18, 1980, Ser. No. 141,703
Int. Cl.³ H04B *15/00, 17/00*
U.S. Cl. 455—62 **15 Claims**



7. An improved radio communication system of the type wherein a first radio has a transmission section, a receiving section and a tuning section for tuning sequentially at a relatively slow rate to each in a set of carrier frequencies for transmission of a test signal and a second radio has a transmission section, a receiving section and a tuning section for tuning sequentially at a relatively higher rate to each in the set of frequencies for detecting the test signal, the improvement comprising:

first control means coupled to switch and control the operation of the first radio;

first tuning means coupled to the first control means and to the tuning section of the first radio and responsive to the control means for tuning the first radio at a variable rate;

means coupled to the first control means and to the transmission section of the first radio and responsive to the first control means for generating a continuously cycling test signal to be transmitted by the first radio on a carrier frequency, each cycle comprising a plurality of time periods wherein the test signal assumes the form of a plurality of tones, the total time of the cycle not exceeding the time spent by the second radio tuned to any carrier frequency for receiving the test signal;

means coupled to the first control means and to the receiving section of the first radio for detecting an answer signal transmitted by the second radio;

second means coupled to switch and control the operation of the second radio;

second tuning means coupled to the second control means and to the tuning section of the second radio and responsive to the second control means for tuning the second radio at a variable rate;

means coupled to the second control means and to the receiving section of the second radio for detecting the test signal and for evaluating, with the aid of the test signal, the signal-to-noise ratio of each carrier frequency on which the test signal is detected and for indicating to the second control means the value of the signal-to-noise ratio; and

means coupled to the second control means and to the transmission section of the second radio and responsive to the second control means for generating an answer signal to be transmitted on the carrier frequency having the highest signal-to-noise ratio.

DESIGN PATENTS

GRANTED JAN. 5, 1982

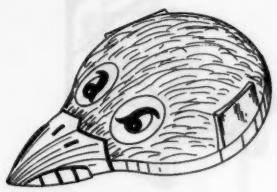
ERRATA

For CLASS	See PATENT NO.
D32–022	262,539

DESIGNS

JANUARY 5, 1982

262,495
HAT OR THE LIKE
Michael S. Hatten, 1346 Merle Hay Rd., Des Moines, Iowa 50311
Filed Feb. 25, 1980, Ser. No. 124,066
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—248



262,496
SHOE
Dana M. DeCoster, Detroit, Mich., assignor to Gomarc VII Corporation, Madison Heights, Mich.
Filed Feb. 5, 1980, Ser. No. 118,901
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—309

262,497
BODY SUPPORTED CONTAINER FOR SMALL PERSONAL ARTICLES
Lam Chan, Kin Hing Industrial Bldg., Block A, 1/F & Block A, 6/F, Shek Kin St., Kwai Chung, Kowloon, Hong Kong
Filed Oct. 25, 1978, Ser. No. 954,620
Claims priority, application United Kingdom, May 19, 1978, 984,666
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—30.1

262,498
KEY PLATE HOOK
Aron Beilis, 116 Bowdoin St., Staten Island, N.Y. 10306
Filed Sep. 29, 1980, Ser. No. 191,530
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—61

262,499

COLUMN-TYPE DISPLAY DEVICE

Robert R. Beath, Agincourt, Canada, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 20, 1979, Ser. No. 68,255
Claims priority, application Canada, Feb. 22, 1979, 2202792
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—20

262,500

STOOL

Peter A. Rocchia, San Francisco, Calif., assignor to The Wicker Works, San Francisco, Calif.

Filed Feb. 21, 1979, Ser. No. 13,548
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—36

262,501

PATTERN CUTTING CABINET

Sidney A. Lenger, Jr., Jamestown, N.C., assignor to The Singer Company, Stamford, Conn.

Filed Sep. 7, 1979, Ser. No. 73,346
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—40

262,502

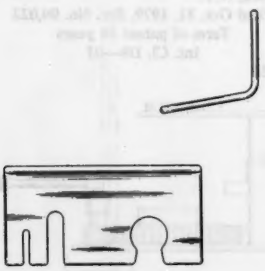
CHAIR

Robert L. Wilson, Memphis, Tenn., assignor to Chromcraft Corporation, Amsterdam, N.Y.

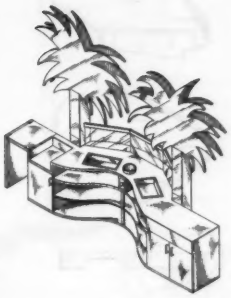
Filed Jan. 24, 1980, Ser. No. 114,806
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56

262,503
CHAIR
Rolf Benz, Nagold, Fed. Rep. of Germany, assignor to Wohncollection Rolf Benz GmbH & Co., Nagold, Fed. Rep. of Germany
Filed Jul. 17, 1978, Ser. No. 925,402
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—71

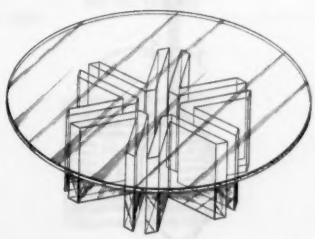
262,504
INSTRUMENT HOLDER
Mary E. Flynn, St. Petersburg, Fla., assignor to Sandspur Enterprises, Inc., St. Petersburg, Fla.
Filed Apr. 28, 1980, Ser. No. 144,524
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—125



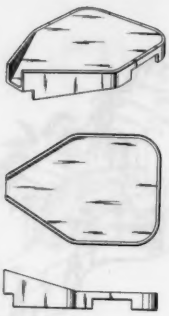
262,505
COUNTER
James L. Buchanan, and Lloyd A. Dye, both of 7701 E. Kellogg, Ste. 270, Wichita, Kans. 67207
Filed Feb. 15, 1979, Ser. No. 12,316
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—144



262,506
TABLE
John Kim, 240 Sullivan St., New York, N.Y. 10012
Filed Oct. 31, 1979, Ser. No. 89,794
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—146

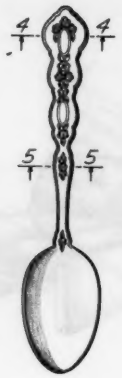


262,507
COMBINED CHOPPING BOARD AND FUNNEL
James C. Wooldridge, 394 Calle Guaymas, San Clemente, Calif. 92672
Filed Mar. 31, 1980, Ser. No. 136,108
Term of patent 14 years
Int. Cl. D07—*04, 99*
U.S. Cl. D7—46

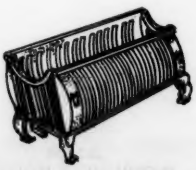


262,508
SPOON OR SIMILAR ARTICLE
Colin B. Richmond, II, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Apr. 22, 1980, Ser. No. 142,732
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—137

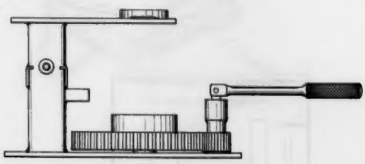
262,509
SPOON OR SIMILAR ARTICLE
Colin B. Richmond, II, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Jul. 18, 1980, Ser. No. 170,149
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—137



262,510
COAL BURNING GRATE
Richard W. Mellow, Jr., Ladue, Mo., assignor to Liberty Foundry Co., St. Louis, Mo.
Filed Feb. 28, 1980, Ser. No. 125,690
Term of patent 14 years
Int. Cl. D7—*08*
U.S. Cl. D7—207



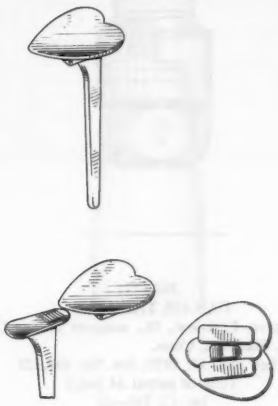
262,511
PAINT SPRAY FLUID SECTION REPAIR TOOL
Richard A. Larson, Boulder, Colo., assignor to SCM Corporation, New York, N.Y.
Filed Oct. 31, 1979, Ser. No. 90,022
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—21



262,512
GRASS CUTTING ATTACHMENT FOR USE WITH CHAIN SAWS AND THE LIKE
Brian Moore, Cosgrove, England, assignor to Pennwalt Corporation, Philadelphia, Pa.
Filed May 25, 1979, Ser. No. 42,644
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—08

262,513
SLIDE HAMMER NAIL PULLER
Steven R. Allen, P.O. Box 74, Glenwood, Oreg. 97120
Filed Mar. 23, 1979, Ser. No. 22,980
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—89

262,514
BEACH BLANKET ANCHOR
Jan W. Gilbert, Lynbrook, N.Y., assignor to QX Inc., Lynbrook, N.Y.
Filed Dec. 10, 1980, Ser. No. 215,022
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—388

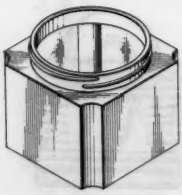


262,515
CONFECTIONERY CONTAINER
Arthur T. Shorin, New York, N.Y., assignor to Topps Chewing Gum, Incorporated, Brooklyn, N.Y.
Filed Dec. 31, 1979, Ser. No. 108,827
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—307

262,516
BOTTLE
Koji Oshita, Hitotsubashi, Japan, assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland
Filed Aug. 6, 1979, Ser. No. 63,943
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—349

262,517
CAN OR THE LIKE
Edward J. Hayes, Elmhurst, Ill., assignor to The Continental Group, Inc., Stamford, Conn.
Filed Dec. 17, 1979, Ser. No. 104,525
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—351

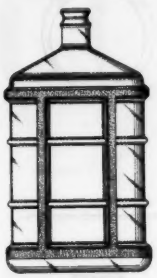
262,518
JAR
James E. Cottrell, Los Angeles, Calif., assignor to Pro-Line Corporation, Dallas, Tex.
Filed Nov. 15, 1979, Ser. No. 94,864
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—370



262,519
COMBINED BOTTLE AND CAP
Howard H. McIlvain, Cincinnati, Ohio, assignor to The Gillette Company, Boston, Mass.
Filed Dec. 17, 1979, Ser. No. 103,874
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—377

262,520
BOTTLE
John Pardo, Yonkers, N.Y., and David A. Jones, Kettering, Ohio, assignors to The Drackett Company, Cincinnati, Ohio
Filed Dec. 13, 1979, Ser. No. 103,013
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—378

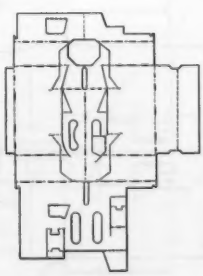
262,521
BOTTLE
Shirley E. Frahm, and Carl E. Frahm, both of 1428 Oak Meadow Rd., Arcadia, Calif. 91006
Filed Nov. 16, 1979, Ser. No. 94,979
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—394



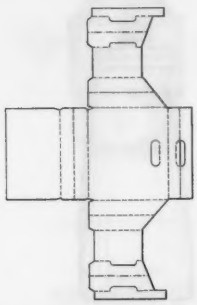
262,522
BOTTLE
Shirley E. Frahm, and Carl E. Frahm, both of 1428 Oak Meadow Rd., Arcadia, Calif. 91006
Filed Jul. 28, 1980, Ser. No. 173,109
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—394

262,523
BOTTLE
Howard H. McIlvain, Cincinnati, Ohio, assignor to The Gillette Company, Boston, Mass.
Filed Dec. 17, 1979, Ser. No. 103,873
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—404

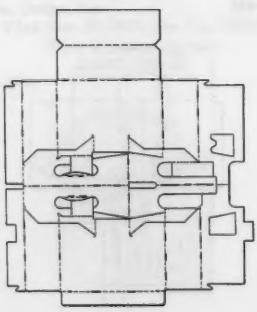
262,524
BASKET CARRIER BLANK
Jerry F. Wilson, West Monroe, La., assignor to Johns-Manville Corporation, Denver, Colo.
Filed Nov. 29, 1979, Ser. No. 99,117
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—433



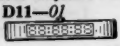
262,525
CARRIER BLANK
Earl J. Killy, Monroe, La., assignor to Johns-Manville Corporation, Denver, Colo.
Filed Nov. 29, 1979, Ser. No. 99,118
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—433



262,526
BASKET CARRIER BLANK
Jerry F. Wilson, West Monroe, La., assignor to Johns-Manville Corporation, Denver, Colo.
Filed Jan. 10, 1980, Ser. No. 115,158
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—433



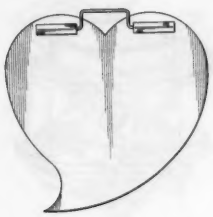
262,527
DIGITAL RING
Mark Goldberg, 3 Euston St., Apt. 2, Brookline, Mass. 02146
Filed Mar. 19, 1979, Ser. No. 22,071
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—2



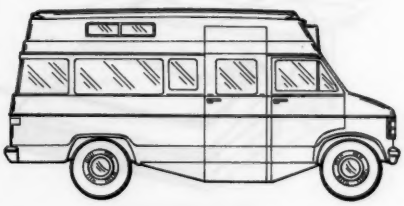
262,528
FINGER RING
Gregory M. Carbino, 2 Pine St., Massena, N.Y. 13662
Filed Sep. 12, 1979, Ser. No. 74,679
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—27

262,529
RING
Alexander Bogdanov, 130 Fort Washington Ave., New York, N.Y. 10032
Filed Jun. 18, 1980, Ser. No. 149,668
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—34

262,530
PENNANT
Charles W. Ewing, 7923 Portal, Houston, Tex. 77071
Filed May 12, 1980, Ser. No. 148,709
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—166

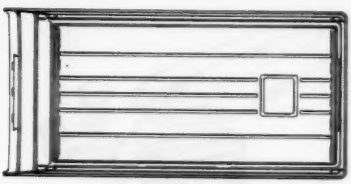


262,531
VEHICLE
Dale M. Hanson, Anaheim, Calif., assignor to Wide One Corporation, Anaheim, Calif.
Filed Jan. 25, 1980, Ser. No. 115,234
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—99

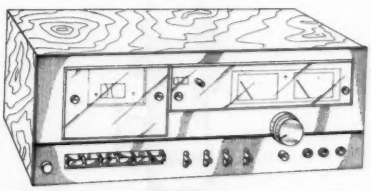


262,532
BICYCLE RACK
Steven K. Levine, 713 Washington St., New York, N.Y. 10014
Filed Dec. 30, 1977, Ser. No. 866,160
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—115

262,533
VEHICLE ROOF
Dale M. Hanson, Anaheim, Calif., assignor to Wide One Corporation, Anaheim, Calif.
Filed Jan. 25, 1980, Ser. No. 115,233
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156



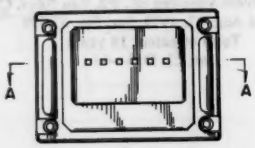
262,534
CASSETTE RECORDER
Leslie A. Dyson, Reigate, England, assignor to Avnet, Inc., New York, N.Y.
Filed Mar. 8, 1979, Ser. No. 18,572
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—6



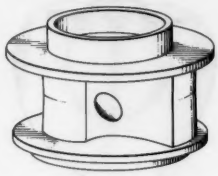
262,535
MICROPHONE STAND
David J. Fisher, 15900 Vanowen St., #2, Van Nuys, Calif. 91406
Filed Aug. 17, 1979, Ser. No. 67,399
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—13

262,536
RADIO RECEIVER
Setsuo Miyanaga, Neyagawa, and Takao Okada, Kyoto, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Jun. 9, 1980, Ser. No. 157,731
Claims priority, application Japan, Dec. 20, 1979, 54-53692
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—71

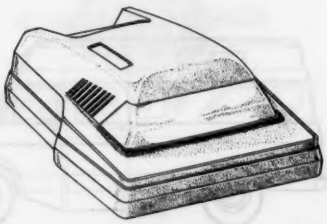
262,537
AMPLIFIER FOR AUTOMOBILE
Toshiyoshi Kikuhara, Naka, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan
Filed Oct. 26, 1979, Ser. No. 88,626
Claims priority, application Japan, Apr. 26, 1979, 54-17297
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—96



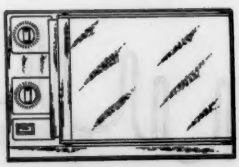
262,538
PUMP IMPELLER
Magnus Erikson, Johnanneshov, Sweden, assignor to ITT Industries, Inc., New York, N.Y.
Filed Oct. 24, 1979, Ser. No. 88,044
Claims priority, application Sweden, Apr. 27, 1979, 79001081
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D15—7



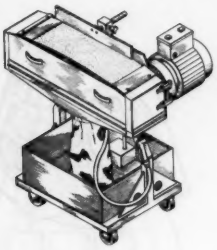
262,539
SUCTION CLEANER NOZZLE OR THE LIKE
Richard A. Wareham, 2315 Schneider Rd. NE., North Canton, Ohio 44720, assignor to The Hoover Company, North Canton, Ohio
Filed Sep. 7, 1979, Ser. No. 73,202
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D32—22



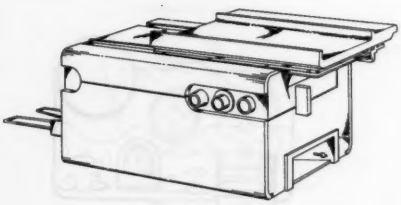
262,540
STEAM PROCESSOR
Paul Lovejoy, 7450 Sherwood Dr., Mentor, Ohio 44060, and David S. Schwerzler, 8750 N. Spring Valley, Chagrin Falls, Ohio 44022
Filed Sep. 7, 1979, Ser. No. 73,276
Term of patent 14 years
Int. Cl. D15—*08;* D7—*02*
U.S. Cl. D15—104



262,541
SKI MAINTENANCE MACHINE
Gary R. Fontaine, 1208 Los Rios Dr., Carmichael, Calif. 95608
Filed Mar. 26, 1979, Ser. No. 23,662
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—124

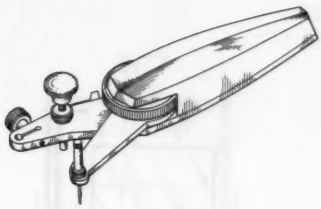


262,542
DOCUMENT COPIER
Hans J. Sinn, Fairfield, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.
Filed Jan. 17, 1980, Ser. No. 112,768
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—31

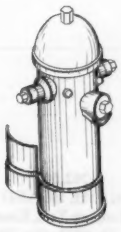


262,543
PREPROGRAMMED ELECTRIC MUSIC GENERATOR
Jeffrey P. Heuel, Riverside, and William F. Palisek, Mundelein, both of Ill., assignors to Interstate Industries, Inc., Mundelein, Ill.
Filed Nov. 28, 1979, Ser. No. 98,309
Term of patent 14 years
Int. Cl. D17—*01, 99*
U.S. Cl. D17—1

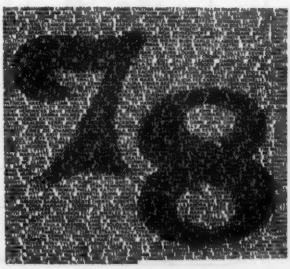
262,544
CONTROLLED LETTERING SCRIBER
Allister L. Baker, Denville, N.J., assignor to Keuffel & Esser Company, Morristown, N.J.
Filed May 23, 1980, Ser. No. 152,932
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—41



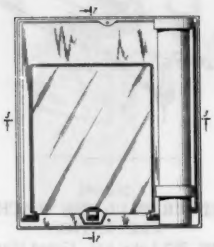
262,545
ANIMATED FIREPLUG FOR TEACHING FIRE PREVENTION
Gerhard W. Wolff, 709 Lake Ave., Grand Haven, Mich. 49417
Filed Jan. 3, 1980, Ser. No. 109,412
Term of patent 14 years
Int. Cl. D19—*01*
U.S. Cl. D19—59



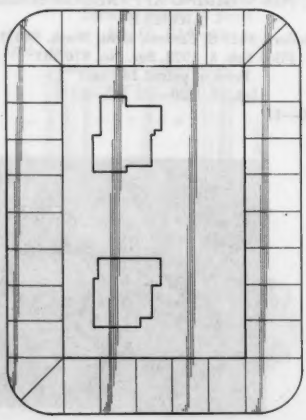
262,546
DECAL FOR WEARING APPAREL OR SIMILAR ARTICLE
B. Donald Sellers, 1819 S. Central, Kent, Wash. 98031
Filed Feb. 8, 1978, Ser. No. 876,181
Term of patent 14 years
Int. Cl. D20—*03*; D2—*02*
U.S. Cl. D20—11



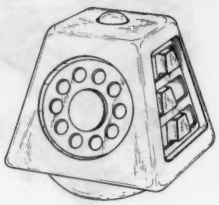
262,547
COMBINED SHEET DISPLAY AND ROLLED SHEET HOLDER
Carl N. Bryan, P.O. Box 325, Winter Haven, Fla. 33880
Filed Dec. 19, 1979, Ser. No. 105,284
Term of patent 14 years
Int. Cl. D20—*43*
U.S. Cl. D20—43



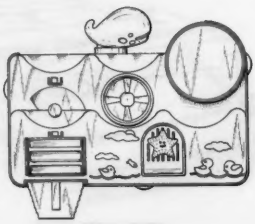
262,548
GAME BOARD
Jean E. Delehant, 103 Lawton Ter., Council Bluffs, Iowa 51501
Filed Sep. 27, 1978, Ser. No. 946,308
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—34



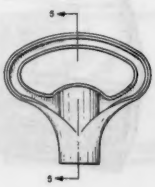
262,549
ACTIVITY TOY
W. Porter Clanton, East Aurora, NY, assignor to The Quaker Oats Company, Chicago, Ill.
Filed Oct. 17, 1979, Ser. No. 85,693
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—59



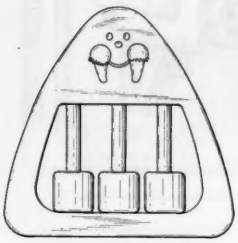
262,550
WATER ACTIVITY TOY
Robert C. Fisher, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 4, 1980, Ser. No. 109,618
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—59



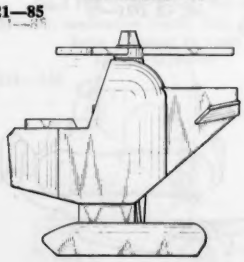
262,551
HANDLE FOR PUSH TOYS OR SIMILAR ARTICLES
Augusto Argandona, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 22, 1980, Ser. No. 114,275
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—59



262,552
RATTLE TOY
Catherine M. Barton, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Nov. 26, 1979, Ser. No. 97,540
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—65

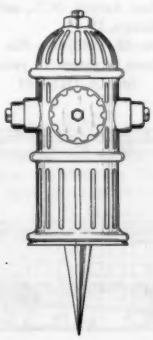


262,553
TOY HELICOPTER
Victor J. Fratarcangeli, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 11, 1980, Ser. No. 111,287
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—85



262,554
KINETIC SCULPTURE
Hidetoshi Matsui, 6-27-311, Imazunaka 3-chome, Tsurumi-ku, Osaka, Japan
Filed Sep. 12, 1979, Ser. No. 75,294
Claims priority, application Japan, Jun. 21, 1979, 54-26377
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D21—102

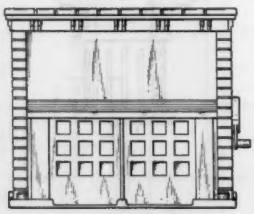
262,555
TOY FIRE PLUG
Robert P. Skubic, 1005 Grant St., Clawson, Mich. 48017
Filed Mar. 3, 1980, Ser. No. 126,291
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—109



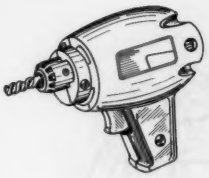
262,556
STUFFED TOY AIRPORT
Craig J. McElhaney, Holland, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 18, 1980, Ser. No. 113,201
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—118

262,557
STUFFED TOY STORE
Craig J. McElhaney, Holland, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 18, 1980, Ser. No. 113,202
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—118

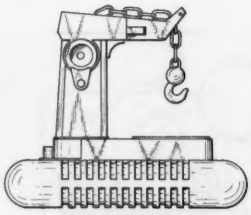
262,558
TOY FIRE HOUSE
W. Porter Clanton, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 22, 1980, Ser. No. 114,418
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—118



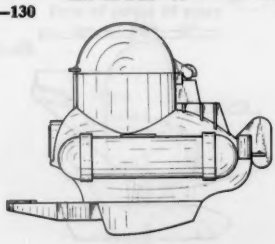
262,559
TOY POWER DRILL
Ronald R. Klawitter, Hermann, Mo., assignor to Steven Manufacturing Company, Hermann, Mo.
Filed Apr. 17, 1978, Ser. No. 896,786
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—120



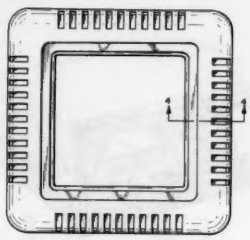
262,560
TOY CRANE
Victor J. Fratarcangeli, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 4, 1980, Ser. No. 109,619
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—124



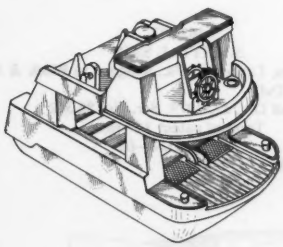
262,561
TOY SUBMARINE
Karl D. Lerch, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 4, 1980, Ser. No. 109,620
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—130



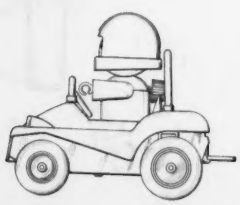
262,562
TOY BARGE
Victor J. Fratarcangeli, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 4, 1980, Ser. No. 109,621
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—130



262,563
TOY BOAT
Victor G. Reiling, Jr., Litchfield, Conn., and W. Porter Clanton, East Aurora, N.Y., assignors to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 22, 1980, Ser. No. 114,284
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—130

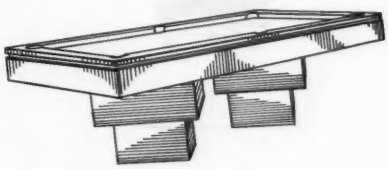


262,564
COMBINED TOY SPORTS CAR AND FIGURE THEREFOR
Naoharu Yamashina, Tokyo, Japan, assignor to Kabushiki Kaisha Bandai Overseas, Tokyo, Japan
Filed Feb. 5, 1979, Ser. No. 9,053
Claims priority, application Japan, Aug. 10, 1978, 53-33915
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—136



262,565
TRUNDLE TOY CLOWN
Larry R. Nagode, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 22, 1980, Ser. No. 114,257
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—173

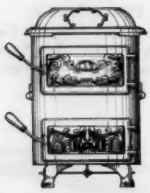
262,566
POOL TABLE
Arnold Kaye, 157 Easton Rd., Westport, Conn. 06880
Filed Aug. 22, 1979, Ser. No. 68,633
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—232



262,567
RIFLE
Robert Hillberg, 26 Mount Sanford Rd., Cheshire, Conn. 06410
Filed Jan. 14, 1980, Ser. No. 111,585
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—6

262,568
FOUNTAIN
Clifford N. Craig, 227 N. Pintado Dr., Diamond Bar, Calif. 91765
Filed Aug. 20, 1979, Ser. No. 67,886
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—13

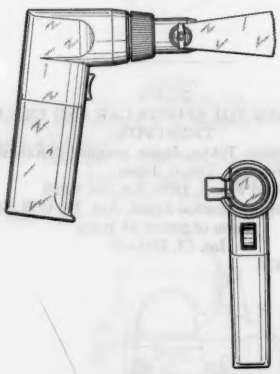
262,569
COAL STOVE
Lawrence E. Trainer, 42 Fairview Ave., Pembroke, Mass. 02359
Filed Feb. 22, 1980, Ser. No. 123,505
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



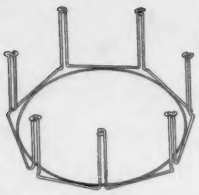
262,570
CEILING FAN
Gregory J. Lock, Germantown, Tenn., assignor to Robbins & Myers, Inc., Dayton, Ohio
Filed Jun. 16, 1980, Ser. No. 160,039
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—158

262,571
FETAL MONITOR ENCLOSURE
Stephen A. Francis, Meriden, Conn., assignor to American Home Products Corporation, New York, N.Y.
Filed Sep. 13, 1979, Ser. No. 75,384
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—17

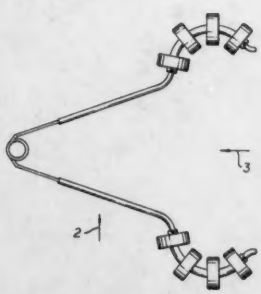
262,572
SAGITTAL SAW
Meyric K. Rogers, Lancaster, Pa., assignor to Black & Decker Inc., Newark, Del.
Filed Oct. 17, 1979, Ser. No. 86,362
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—28



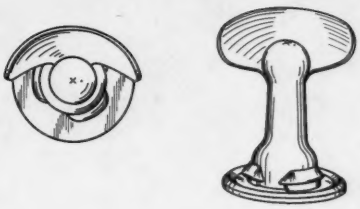
262,573
CAGE FOR A CHROMATOGRAPHY FUSED-SILICA CAPILLARY COLUMN
Norman W. Wohlers, Davis, Calif., assignor to J & W Scientific, Inc., Rancho Cordova, Calif.
Filed Jun. 13, 1980, Ser. No. 159,137
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—31



262,574
MASSAGING DEVICE
Robert E. Lindberg, 16240 Center Rd., Rte. 1, East Lansing, Mich. 48823
Filed Oct. 15, 1979, Ser. No. 84,785
Term of patent 14 years
Int. Cl. D24—*04, 99*
U.S. Cl. D24—36



262,575
CLEFT PALATE NIPPLE OR THE LIKE
Antonino Araujo, Jr., Columbus, Ohio, assignor to Abbott Laboratories, North Chicago, Ill.
Filed Mar. 15, 1979, Ser. No. 20,552
Term of patent 14 years
Int. Cl. D24—*05*
U.S. Cl. D24—46



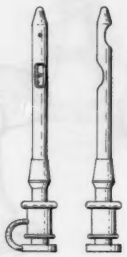
262,576
PREMATURE INFANT NIPPLE OR THE LIKE
Gene C. Anderson-Shanklin, Gainesville, Fla., and Antonino Araujo, Jr., Columbus, Ohio, assignors to Abbott Laboratories, North Chicago, Ill.
Filed Apr. 16, 1979, Ser. No. 30,190
Term of patent 14 years
Int. Cl. D24—*05*
U.S. Cl. D24—46

262,577

ANIMAL UDDER FLUID DRAIN-INJECTION TUBE AND COVER THEREFOR

Mark L. Anderson, R.R. 2, Elmwood, Wis. 54740

Filed Dec. 18, 1978, Ser. No. 970,322
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—61



262,578

COMBINED POWER FAILURE AND FLASH LIGHT WITH BUZZER

Thomas H. Nicholl, 1204 W. 27th St., Kansas City, Mo. 64108; Donald L. Rohrs, Overland Park, Kans., and John J. Collins, Kansas City, Mo., assignors to Thomas H. Nicholl, Kansas City, Mo.

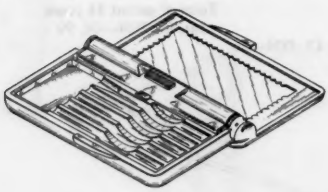
Continuation-in-part of Ser. No. 907,606, May 19, 1978, Pat. No. Des. 254,514. This application Jan. 14, 1980, Ser. No. 111,945
Term of patent 14 years
Int. Cl. D26—*05, 02*
U.S. Cl. D26—26

262,579

COMBINED MAKEUP MIRROR AND BRUSH BOX

John deHaseth, Whittier, Calif., assignor to Jonee, Inc., Pico Rivera, Calif.

Filed Jun. 23, 1980, Ser. No. 161,853
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—83



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Law, William J. H., 4,309,055, Cl. 296-63.000.

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Zitser, Vitaly A.; Melnikov, Alexandr V.; Bachelis, Leonid V.; Shishkin, Nikolai K.; Morozov, Jury E.; Ivanov, Vladimir A.; Olshansky, Semen A.; Dreishev, Igor I.; Stolyar, Eduard A.; Kushelman, Vladimir S.; Shartner, Eduard G.; Abaskalov, Vladimir D.; and Levinson, Vladimir A., 4,308,909, Cl. 164-207.000.

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Chu, Daniel T.; Martin, Jerry R.; and Thomas, Alford M., 4,309,342, Cl. 260-112.50R.

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Roos, Martin; Eykamp, William; and Cooper, William W., IV, 4,309,287, Cl. 210-247.000.

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Fischer, David A., 4,308,863, Cl. 128-92.00A.

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Keller, Nicholas W., 4,308,964, Cl. 211-126.000.

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Havens, Richard C., 4,309,672, Cl. 331-96.000.

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Stemme, Otto; Lermann, Peter; Wagner, Karl; Engelsmann, Dieter; and Schroder, Rolf, 4,309,097, Cl. 354-173.000.

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Sylla, Jurgen; and Pahl, Gerrit, 4,309,087, Cl. 353-92.000.

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Arnoux, Daniel; Genter, Claude; Aguettaz, Jean; Berthelot, Alain; and Michel, Bernard, 4,309,682, Cl. 335-128.000.

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Nakano, Shosaburo; Hiro, Toshiharu; Nishiyama, Noboru; Agusa, Kazuo; and Kosho, Masaaki, 4,309,587, Cl. 219-73.110.

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Ito, Toshimasa; and Aiba, Jiro, 4,309,666, Cl. 330-286.000.

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Jefferson, Donald E.; Coe, Charles G.; Beitchman, Burton D.; and Uffner, Melville W., 4,309,511, Cl. 525-14.000.

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Hay, Wayne W., 4,308,865, Cl. 128-200.140.
Rothchild, Ronald D., 4,308,876, Cl. 131-293.000.

Aisin Warner, K.K.: *See—*
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Kubo, Masashige; Nonaka, Yuji; and Kihara, Keiichi, 4,309,341, Cl. 260-112.50R.

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Akimoto, Hiroshi: *See—*
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Bjorkman, Simon J.; Jonsson, Georg S.; and Rundquist, Per S. R., 4,309,606, Cl. 250-252.000.

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Hope, Peter; and Mellor, Malcolm, 4,309,337, Cl. 260-45.75S.

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Hamilton, Brian K., 4,309,229, Cl. 149-82.000.

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Goldman, Mark, 4,309,677, Cl. 333-81.00A.

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Brown, Melvin H., 4,308,808, Cl. 110-342.000.

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Shepherd, Robert G., 4,309,553, Cl. 549-22.000.
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Asselin, Andre A.; Humber, Leslie G.; Dionne, Gervais; Revesz, Clara; and Failli, Amedeo, 4,309,348, Cl. 260-326.280.
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Ahad, Munir J., 4,309,001, Cl. 242-107.40D.

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Reiss, John R., 4,309,018, Cl. 248-503.000.

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Chamberlain, Robert E.; and Cook, Thomas G., 4,309,381, Cl. 422-3.000.

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Hou, Kenneth C.; and Ostreicher, Eugene A., 4,309,247, Cl. 162-149.000.
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Ryan, John O.; Corkery, Joseph L.; Sudyka, Edward P.; Brill, Gerow D.; Reagan, Anne M.; and Holzgrafe, James R., 4,309,723, Cl. 358-163.000.

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Craven, Robert B., 4,309,693, Cl. 340-347.0DA.

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ASEA Aktiebolag: *See—*
Borgstrom, Gunnar; and Rothman, Bengt, 4,309,231, Cl. 156-54.000.
Isaksson, Sven-Erik, 4,309,568, Cl. 174-151.000.

Ashley, Holvor W.; and Li, Vincent H., to Sherwood Medical Industries Inc. Rate measurement analyzer. 4,309,112, Cl. 356-436.000.

Asics Corporation: *See—*
Ueno, Yoshio; and Inohara, Masanobu, 4,309,376, Cl. 264-241.000.

Aso, Akira: *See—*
Yoshikawa, Toshihumi; Tani, Zempei; Aso, Akira; and Kawanabe, Hitoshi, 4,309,604, Cl. 250-226.000.

Asselin, Andre A.; Humber, Leslie G.; Dionne, Gervais; Revesz, Clara; and Failli, Amedeo, to American Home Products Corporation. Tricyclic indole derivatives. 4,309,348, Cl. 260-326.280.

Atlantic Richfield Company: *See—*
Ecker, Amir L., 4,308,723, Cl. 62-235.100.

Ato Chimie: *See—*
Kornbaum, Simon, 4,309,465, Cl. 428-35.000.

August, Peter: *See—*
Huber, Peter; August, Peter; Lampelzammer, Helga; and Primas, Willi, 4,309,478, Cl. 428-391.000.

Ault, Cyrus F., to Bell Telephone Laboratories, Incorporated. Mismatch detection circuit for duplicated logic units. 4,309,768, Cl. 371-68.000.

Austin, Paul R., to University of Delaware. Renatured chitosan and process of making same. 4,309,534, Cl. 536-20.000.

Autotherm, Inc.: *See—*
Perhats, Francis J., 4,308,994, Cl. 237-12.30B.

Autovox S.p.A.: *See—*
Dellantonio, Ezio F., 4,308,757, Cl. 74-10.800.

Ayres, James W.: *See—*
Roseman, Theodore J.; Carpenter, Osmer S.; Baker, Richard W.; and Ayres, James W., 4,308,867, Cl. 128-260.000.

B. F. Goodrich Company, The: *See—*
Lai, John T.; and Whitehead, Valerie B., 4,309,336, Cl. 260-45.80N.
Reed, Eugene L., 4,308,747, Cl. 73-146.000.

Babcock-BSH Aktiengesellschaft: *See—*
Roos, Friedrich; Bolz, Johannes; and Grebe, Ingo, 4,308,667, Cl. 34-23.000.

Babcock-Hitachi Kabushiki Kaisha: *See*—
Uemura, Toshio; Watanabe, Yoshiki; Masumoto, Yoji; Ishikawa, Tomihisa; Kajimoto, Noboru; and Kawada, Shin, 4,308,806, Cl. 110-244.000.
Babcock & Wilcox Company, The: *See*—
Pirsh, Edward A., 4,309,386, Cl. 422-177.000.
Baccei, Louis J., to Loctite Corporation. Unsaturated curable poly(alkylene)ether polyol-based resins having improved properties. 4,309,526, Cl. 528-75.000.
Bach, Frederick O.: *See*—
Pudark, Arthur A.; Niesen, George P.; Bach, Frederick O.; and Shukla, Mahendra B., 4,309,102, Cl. 355-14.0SH.
Bachelis, Leonid V.: *See*—
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Bainbridge, Robert W.: *See*—
Dannels, W. Andrew; and Bainbridge, Robert W., 4,309,379, Cl. 264-328.200.
Baker, Ellery L., to United Wire & Supply Corporation. Tube pointer. 4,308,744, Cl. 72-402.000.
Baker, Richard W.: *See*—
Roseman, Theodore J.; Carpenter, Osmer S.; Baker, Richard W.; and Ayres, James W., 4,308,867, Cl. 128-260.000.
Balke, George L.; and Jablonski, Edward F., to Davy Inc. Checkerwork supporting means. 4,308,910, Cl. 165-9.300.
Ball Corporation: *See*—
McDowell, Jerry T., 4,308,773, Cl. 83-37.000.
Ball, Wyatt: *See*—
Kunberger, Walter R. A.; and Ball, Wyatt, 4,308,628, Cl. 7-145.000.
Balogh, Dezso: *See*—
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Bamberger, Carlos E.: *See*—
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Barber-Greene Company: *See*—
Prill, Fredric W.; and Binz, Lee V., 4,309,168, Cl. 432-24.000.
Barley, Geoffrey W., to UOP Inc. Load supporting frame. 4,309,058, Cl. 297-284.000.
Barmag Barmer Maschinenfabrik AG: *See*—
Bauer, Karl, 4,308,716, Cl. 57-286.000.
Barnett, Richard L.: *See*—
McReynolds, Billy L.; and Barnett, Richard L., 4,308,972, Cl. 220-335.000.
Baron, Gerhard; Sauter, Dieter; and Sindel, Wolfgang, to Metallgesellschaft AG. Process of producing coal briquettes for gasification or devolatilization. 4,309,190, Cl. 44-16.00R.
Barrett, Michael G.; and Vaughan, David E. W., to W. R. Grace & Co. Synthesis of cesium-containing zeolite, CSZ-1. 4,309,313, Cl. 252-455.00Z.
Bartholic, David B., to Engelhard Minerals & Chemicals Corporation. Preparation of FCC charge from residual fractions. 4,309,274, Cl. 208-80.000.
Bartz, Wilfried, to Chemische Werke Huels, AG. Heat-curable aqueous coating compositions. 4,309,260, Cl. 204-181.00R.
BASF Wyandotte Corporation: *See*—
Arora, Manohar L.; and Foye, Thomas E., 4,309,320, Cl. 260-23.00R.
Rouwhorst, Dale L.; and Jillson, Ronald L., 4,309,223, Cl. 106-309.000.
Baskent, Feyyaz O.; and Prokai, Bela, to Union Carbide Corporation. Siloxane copolymer mixtures useful as foam stabilizers in high resilience polyurethane foam. 4,309,508, Cl. 521-112.000.
Bass, Coleman. Two row tree planter. 4,308,811, Cl. 111-3.000.
Bassan & Cie.: *See*—
Talan, Jacques, 4,309,136, Cl. 411-36.000.
Battelle-Institut e.V.: *See*—
Heide, Helmut; Poeschel, Eva; and Roth, Ulrich, 4,309,488, Cl. 428-547.000.
Reiner, Roland; and Kaiser, Hildulf, 4,309,453, Cl. 427-54.100.
Baudner, Siegfried: *See*—
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Baudoux, Jean-Pierre, to Telecommunications Radioelectriques et Telephoniques T.R.T. Circuit for rapidly resynchronizing a clock. 4,309,662, Cl. 328-73.000.
Bauer, Karl, to Barmag Barmer Maschinenfabrik AG. Apparatus for applying liquid to a running yarn. 4,308,716, Cl. 57-286.000.
Baumgarth, Manfred: *See*—
Radunz, Hans-Eckart; Orth, Dieter; Baumgarth, Manfred; Schliep, Hans-Jochen; and Enenkel, Hans-Joachim, 4,309,441, Cl. 424-305.000.
Baxter Travenol Laboratories, Inc.: *See*—
Martin, Jerry D.; Pearson, Stephen J.; Ward, Gary A.; and Winchell, David A., 4,308,904, Cl. 150-0.500.
Bayer Aktiengesellschaft: *See*—
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Koll, Jochen; Paulat, Volker; Hornle, Reinhold; Molls, Hans-Heinz; and Nonn, Konrad, 4,309,182, Cl. 8-527.000.
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Kramer, Wolfgang; Buchel, Karl H.; Timmler, Helmut; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,309,434, Cl. 424-269.000.
Neeff, Rutger; Rolf, Meinhard; and Muller, Walter, 4,309,221, Cl. 106-164.000.
Schmidt, Thomas; Wittig, Andreas; Sehnem, Hans-Peter; Kratzer, Hans; and Singer, Rolf-Jurgen, 4,309,538, Cl. 544-182.000.
Bayly, Peter K.; and Oretti, John E., to Peter Bayly Associates Australia Pty. Ltd. Dispensing device. 4,308,978, Cl. 222-449.000.
BBC Brown, Boveri & Company, Ltd.: *See*—
Eggmann, Jean; and Hartmann, Max, 4,309,144, Cl. 415-105.000.
Beall, George H., to Corning Glass Works. Polychromatic glasses and method. 4,309,217, Cl. 501-56.000.
Beard Industries, Inc.: *See*—
Noyes, Ronald T.; and Williams, Eugene E., 4,308,669, Cl. 34-33.000.
Beck, Kurt-Gunther; Habermehl, Diethard; Kucharzyk, Werner; and Siebert, Werner, to Bergwerksverband GmbH; and Didier Engineering GmbH. Method and apparatus for tar recovery from raw coking gas. 4,309,253, Cl. 201-30.000.
Beck, Stephen C.: *See*—
Goldfarb, Adolph E.; and Beck, Stephen C., 4,309,030, Cl. 273-1.0GC.
Becker, Werner; Holland-Letz, Gunter; and Volk, Heinrich, to Esselte Pendaflex Corporation. Apparatus for printing or applying self-adhesive labels. 4,308,797, Cl. 101-292.000.
Beckler, Robert I. Method of automatically evaluating source language logic condition sets and of compiling machine executable instructions directly therefrom. 4,309,756, Cl. 364-300.000.
Beckman Instruments, Inc.: *See*—
Crosby, John B., 4,309,692, Cl. 340-347.0NT.
Lauderdale, Vivian R., 4,309,502, Cl. 435-15.000.
Levine, Melvin; Jacobetz, Paul J.; and Sperry, Elmer A., III, 4,309,262, Cl. 204-195.00R.
Beckmann, Wilhelm; and Mogendorf, Friedel, to Schloemann-Siemag Aktiengesellschaft. Apparatus for transversely conveying profiled rods and rails. 4,308,945, Cl. 198-750.000.
Beecham Group Limited: *See*—
Pathak, Ram D.; and Treherne, Elezabeth J., 4,309,408, Cl. 424-44.000.
Smith, David G.; and Ainsworth, Anthony T., 4,309,443, Cl. 424-319.000.
Beene, Gerald W.: *See*—
Martin, Hubert; and Beene, Gerald W., 4,309,676, Cl. 333-14.000.
Behm, William C., to Reynolds Manufacturing Company. Ejector type scraper. 4,308,677, Cl. 37-126.0AE.
Behringwerke Aktiengesellschaft: *See*—
Haupt, Heinz; and Baudner, Siegfried, 4,309,339, Cl. 260-112.00B.
Beitchman, Burton D.: *See*—
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Bell Telephone Laboratories, Incorporated: *See*—
Acampora, Anthony, 4,309,764, Cl. 370-83.000.
Ault, Cyrus F., 4,309,768, Cl. 371-68.000.
Boros, Victor B.; Giacopelli, James N.; and Papathomas, Thomas V., 4,309,650, Cl. 323-283.000.
Boyd, Gary D.; Coldren, Larry A.; and Storz, Frederick G., 4,309,267, Cl. 204-298.000.
Camlibel, Irfan; Singh, Shobha; Van Uitert, LeGrand G.; and Zydzik, George J., 4,309,081, Cl. 350-357.000.
Carter, Herman L., Jr.; Hart, Robert R.; and Weissmann, Gerd F. H., 4,309,618, Cl. 250-561.000.
Henry, Paul S., 4,309,694, Cl. 340-347.0DD.
Lanty, Henry A., 4,309,755, Cl. 364-200.000.
MacPherson, William F.; Scott, Robert S.; and Shackle, Peter W., 4,309,715, Cl. 357-37.000.
Singh, Shobha; Van Uitert, LeGrand G.; and Zydzik, George J., 4,309,460, Cl. 427-250.000.
Young, Ernst H., Jr., 4,309,630, Cl. 307-584.000.
Bellows, A. Robert; and Tapper, David, to Children's Hospital Medical Center, The. Diagnosis of eye tumors. 4,308,874, Cl. 128-745.000.
Bemmerl, Hans-Ferdinand, to Bochumer Eisenhutte Heintzmann GmbH & Co. Mine roof support. 4,309,130, Cl. 405-294.000.
Bender, Werner; Bergner, Dieter; Hannesen, Kurt; Muller, Wolfgang; and Schulte, Wilfried, to Hoechst Aktiengesellschaft. Electrolysis apparatus. 4,309,264, Cl. 204-256.000.
Bendix Corporation, The: *See*—
McCombs, Howard L., Jr., 4,309,149, Cl. 417-63.000.
Mulkins, George F.; Dombrowski, Jerome P.; and Isliker, Gaston R., 4,309,738, Cl. 361-253.000.
Van Ausdal, Robert K., 4,308,892, Cl. 137-625.230.
Bendoni, Leonard V.; and Wareham, Richard R., to Polaroid Corporation. Film processor for instant type transparency film. 4,309,100, Cl. 354-303.000.
Bengtsson, Raymond: *See*—
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Bengtsson, Rune: *See*—
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Bentz, Gerard: *See*—
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Bentzen, Craig L., to Symphar S.A. Method for the clinical separation of α- and β-lipoproteins. 4,309,188, Cl. 23-230.00B.
Bentzen, Craig L.; Mong, Lan N.; and Niesor, Eric, to Symphar S.A. Diphosphonates. 4,309,364, Cl. 260-931.000.
Berger, Pierre, to Creusot-Loire. Casing for a machine, with several parallel screws, for treating materials. 4,308,655, Cl. 29-463.000.
Bergner, Dieter: *See*—
Bender, Werner; Bergner, Dieter; Hannesen, Kurt; Muller, Wolfgang; and Schulte, Wilfried, 4,309,264, Cl. 204-256.000.
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Bernard, Olivier, to Saft-Societe des Accumulateurs Fixes et de Traction. Electric storage cell with a vibration-proof comb-type connection. 4,309,492, Cl. 429-161.000.
Bertels, Augustinus W. M., to Bruil-Arnhem Wegenbouw B.V. Reinforced asphalt layer. 4,309,124, Cl. 404-70.000.
Berthelot, Alain: *See*—
Arnoux, Daniel; Genter, Claude; Aguettaz, Jean; Berthelot, Alain; and Michel, Bernard, 4,309,682, Cl. 335-128.000.
Bertolotti, Francis; Daverio, Jean-Claude; and Weber, Georges, to Institut de Recherches de la Siderurgie Francaise. Apparatus for cooling elongated products during their passage through the apparatus. 4,308,881, Cl. 134-122.00R.
Bertsch, Dieter: *See*—
Grabow, Kurt; Mahl, Willy; Muller, Karl-Heinz; Kochendorfer, Heinrich; Bertsch, Dieter; Mayer, Siegfried; Anhenn, Jorg; and Dworak, Wilhelm, 4,309,158, Cl. 418-132.000.
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Betzing, Hans: *See*—
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Bey, Philippe; and Jung, Michel, to Merrell Toraude et Compagnie. Method for controlling fertility in mammals. 4,309,442, Cl. 424-319.000.
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Forro, Dezso; Balogh, Dezso; Csaszar, Laszlo; Tolgyesi, Laszlo; and Havalda, Endre, 4,309,748, Cl. 363-65.000.
Bigham, Eric C., to Pfizer Inc. Penicillanoyloxymethyl penicillanate 1,1,1',1'-tetraoxide. 4,309,347, Cl. 260-245.20R.
Bigler, Allan J.: *See*—
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Billings, William G.; and Scinta, James, to Phillips Petroleum Company. Production of carbon monoxide from carbon. 4,309,397, Cl. 423-415.00A.
Binz, Lee V.: *See*—
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Biollaz, Michel, to Ciba-Geigy Corporation. Compounds of the pregnane series with an oxygen function in the 19-position, processes for their manufacture and pharmaceutical preparations containing these compounds. 4,309,423, Cl. 424-242.000.
Bird, Graham J.: *See*—
Serban, Alexander; Farquharson, Graeme J.; Bird, Graham J.; and Lydiate, Jack, 4,309,211, Cl. 71-93.000.
Birkenmeyer, Robert D., to Upjohn Company, The. Lincomycin compounds. 4,309,533, Cl. 536-11.000.
Bischoff, Robert F., to Emerson Electric Co. Bearing movement preventing system. 4,309,062, Cl. 308-29.000.
Biscomb, Lloyd I. Tethered airfoil wind energy conversion system. 4,309,006, Cl. 244-33.000.
Bjorkman, Simon J.; Jonsson, Georg S.; and Rundquist, Per S. R., to Aktiebolaget Atomenergi. Measuring plate thickness. 4,309,606, Cl. 250-252.000.
Black & Decker Inc.: *See*—
Jackson, Ronald A.; and Maruscak, John, 4,308,934, Cl. 182-184.000.
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Black, Lenoir: *See*—
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Blahut, Richard E., to International Business Machines Corporation. Segmented chirp waveform implemented radar system. 4,309,703, Cl. 343-17.2PC.
Blair, Charles M., Jr., to Magna Corporation. Micellar solutions of thin film spreading agents comprising resinous polyalkylene oxide adducts. 4,309,306, Cl. 252-358.000.
Blanton, William A., Jr., to Chevron Research Company. Adding fuel in catalyst regeneration. 4,309,309, Cl. 252-417.000.
Blaszkowski, Henry. Soap bar and releasable holder. 4,309,014, Cl. 248-359.000.
Blizzard, John D., to Dow Corning Corporation. Silicone adhesive formulations. 4,309,520, Cl. 525-477.000.
Blodgett, Jerry A.; and Patten, Raymond A., to United States of America, Navy. Pulsed interferometric remote gauge. 4,309,109, Cl. 356-355.000.
Bloom, Stephen R. Adjustable tailpipe hanger. 4,309,019, Cl. 248-610.000.
Bloot, Pieter C.; and van Kleef, Johannes H. K. C., to U.S. Philips Corporation. Gas discharge laser. 4,309,669, Cl. 331-94.50D.
Blough, LeVone A.: *See*—
Steffen, Robert G.; Gregory, David L.; and Blough, LeVone A., 4,309,140, Cl. 411-264.000.
Board of Regents, University of Texas: *See*—
Kelly, Dan H., 4,308,861, Cl. 128-68.000.
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Bemmerl, Hans-Ferdinand, 4,309,130, Cl. 405-294.000.
Bollmann, Alfred, 4,309,131, Cl. 405-294.000.
Bock, Ditmar H., to Calspan Corporation. Flywheel electric transmission apparatus. 4,309,620, Cl. 290-4.00R.
Bock, Mark G.; and Smith, Robert L., to Merck & Co., Inc. Pyrazinyl-1,2,4-oxadiazole-5-ones, for treatment of edema, and processes for preparing same. 4,309,430, Cl. 424-250.000.
Bock, Mark G.; Cragoe, Edward J., Jr.; and Smith, Robert L., to Merck & Co., Inc. Substituted pyrazinyl-1,2,4-oxadiazoles. 4,309,540, Cl. 544-405.000.
Boden, Knut F. I.; Henningsen, Christian J.; and Koster, Arvo, to ESAB Aktiebolag. Device for feeding a wire electrode. 4,309,642, Cl. 318-113.000.
Bodlaj. Viktor, to Siemens Aktiengesellschaft. Device for contact-free [illegible]ss or interval measurement. 4,309,103, Cl. 356-1.000.
Bod[illegible]lex A.: *See*—
Van Huffel, Phillip L.; and Bodner, Alex A., 4,308,633, Cl. 15-104.930.
Boeing Company, The: *See*—
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Bogart, Marlowe C., to Monsanto Company. Methods for assembling permeators. 4,308,654, Cl. 29-451.000.
Bogeso, Klaus P.: *See*—
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Boguth, Kurt, to Tunkers Maschinenbau GmbH. Hydraulic vibrator for moving a ramming and drawing body and a method of moving the same. 4,308,924, Cl. 173-135.000.
Bohannon, William D., Jr., to Western Electric Company, Inc. Methods of and apparatus for forming a metallic tape into a tube having an overlapped seam. 4,308,662, Cl. 29-828.000.
Bohler, Gerard M.; Reed, Edward D.; and Kowalski, Victor A., to Allied Corporation. Hole cutting device for webs. 4,308,774, Cl. 83-100.000.
Bollen, Paul C. Multi-angle photography. 4,309,094, Cl. 354-80.000.
Boller, Arthur; Ceregheti, Marco; and Scherrer, Hanspeter, to Hoffmann-La Roche Inc. Pyrimidine derivatives. 4,309,539, Cl. 544-242.000.
Bollmann, Alfred, to Bochumer Eisenhutte Heintzmann GmbH & Co. Mine roof support. 4,309,131, Cl. 405-294.000.
Bolstad, Richard: *See*—
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Bolz, Johannes: *See*—
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Bomkamp, Raymond L.: *See*—
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Bone, Geoffrey E.: *See*—
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Bone, Kendall F.: *See*—
Perry, Charles B.; Bomkamp, Raymond L.; and Bone, Kendall F., 4,309,600, Cl. 235-375.000.
Bonnema, James V., to Gillette Company, The. Axial fan hair dryer. 4,308,670, Cl. 34-97.000.
Bonnie Corp.: *See*—
Strickland, William N., 4,308,918, Cl. 166-326.000.
Borgstrom, Gunnar; and Rothman, Bengt, to ASEA Aktiebolag. Apparatus for application of a tape of material in longitudinal direction of a substantially rectangular electrical conductor. 4,309,231, Cl. 156-54.000.
Boros, Victor B.; Giacopelli, James N.; and Papathomas, Thomas V., to Bell Telephone Laboratories, Incorporated. Average current controlled switching regulator utilizing digital control techniques. 4,309,650, Cl. 323-283.000.
Borovina, Anton; Grattan, Henry E.; and Borovina, Mark. Flue gas heat recovery system. 4,308,990, Cl. 236-10.000.
Borovina, Mark: *See*—
Borovina, Anton; Grattan, Henry E.; and Borovina, Mark, 4,308,990, Cl. 236-10.000.
Boucher, Normand, to Les Guitares Norman Inc. Warp restoring device for the neck of a stringed musical instrument. 4,308,780, Cl. 84-293.000.
Bour, Edmond H. J. P.; Brouwers, Johannes A. L.; and Warnier, Jean M. M., to Stamicarbon, B.V. Two stage procedure for the preparation of polypyrrolidone. 4,309,530, Cl. 528-326.000.
Bourassa, Hugh: *See*—
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Bout, Bernardus J.; and Van Wyk, Jacobus P. Rate of change detection. 4,309,663, Cl. 328-132.000.
Bowen, E. Lee, to Tyler Refrigeration Corporation. Beverage cooling and dispensing apparatus. 4,308,975, Cl. 222-36.000.
Boyce, Walter F. Alkyl nitrite compositions. 4,309,303, Cl. 252-186.000.
Boyd, Danny R. Cathodic clamp apparatus. 4,309,263, Cl. 204-197.000.
Boyd, Gary D.; Coldren, Larry A.; and Storz, Frederick G., to Bell Telephone Laboratories, Incorporated. Reactive sputter etching apparatus. 4,309,267, Cl. 204-298.000.
Boyen, Steven G. Brassiere. 4,308,869, Cl. 128-478.000.
Bradley, John G., to United States of America, Energy. Between-cycle laser system for depressurization and resealing of modified design nuclear fuel assemblies. 4,309,250, Cl. 376-310.000.
Bradshaw, James E.: *See*—
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Braid, Milton, to Mobil Oil Corporation. Process for reducing the corrosivity of phenol sulfides. 4,309,293, Cl. 252-48.200.
Brandes, Wilhelm: *See*—
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Brandewie, Joseph E.; Feldman, Steven; and Jackson, Mark F., to AMP Incorporated. Single lead insertion connector block loading apparatus. 4,308,659, Cl. 29-748.000.
Brandstadter, Jack M., to Pneumo Corporation. Linear engine/hydraulic pump. 4,308,720, Cl. 60-595.000.
Braschel, Volker: *See*—
Leiber, Heinz; Braschel, Volker; Jonner, Wolf-Dieter; and Wupper, Hans-Herbert, 4,309,060, Cl. 303-106.000.
Brauer, Hans, to Kocks Technik GmbH & Co. Rolling lines for the rolling of wire or rods. 4,308,740, Cl. 72-234.000.
Brazell, Charles R.: *See*—
Hoover, Michael C.; Brazell, Charles R.; Mehta, Shyam B.; Lockett, James F.; and Codding, Elias H., 4,308,959, Cl. 209-563.000.
Brec, Raymond; Le Mehaute, Alain; and Dugast, Alain, to Societe Anonyme dite Compagnie Generale d'Electricite. Electric cell with a non-aqueous electrolyte. 4,309,491, Cl. 429-112.000.
Brennan, Robert H., to General Electric Company. Wide range voltage regulator circuit. 4,309,651, Cl. 323-341.000.
Bretschneider, Walter. Stitched-down shoe. 4,308,671, Cl. 36-11.000.
Bricker, Robert E., to Litton Industrial Products, Inc. Wheelhead drive assembly for a cylindrical grinding machine. 4,308,694, Cl. 51-165.800.
Briggs, Barry D.: *See*—
Wills, David C.; Lawter, Raymond L.; Briggs, Barry D.; and Sampson, Edward F., 4,308,795, Cl. 101-93.370.
Brill, Gerow D.: *See*—
Ryan, John O.; Corkery, Joseph L.; Sudyka, Edward P.; Brill, Gerow D.; Reagan, Anne M.; and Holzgrafe, James R., 4,309,723, Cl. 358-163.000.
Brisabois, Roger, to Regie Nationale des Usines Renault. Automotive vehicle drive train. 4,308,763, Cl. 74-700.000.
British Steel Corporation: *See*—
Page, James H. R.; and Coombs, Alan, 4,309,228, Cl. 148-120.000.
Brooks, Robert, to Owens-Corning Fiberglas Corporation. Process and apparatus for remelting scrap glass. 4,309,204, Cl. 65-28.000.
Brouwers, Johannes A. L.: *See*—
Bour, Edmond H. J. P.; Brouwers, Johannes A. L.; and Warnier, Jean M. M., 4,309,530, Cl. 528-326.000.
Brown, Alexander M. Sealing zipper. 4,308,644, Cl. 24-205.10R.
Brown, Christopher K.; Johnson, Keith, Jr.; and Wion, Donald A., to AMP Incorporated. Multiple wire insertion apparatus. 4,308,660, Cl. 29-749.000.
Brown, Lawrence G. Drive system for bicycles and other apparatus. 4,309,043, Cl. 280-236.000.
Brown, Melvin H., to Aluminum Company of America. Coal burning method to reduce particulate and sulfur emissions. 4,308,808, Cl. 110-342.000.
Brown, William M.: *See*—
Manizza, Guelfo A.; and Brown, William M., 4,308,985, Cl. 229-31.00R.
Bruil-Arnhem Wegenbouw B.V.: *See*—
Bertels, Augustinus W. M., 4,309,124, Cl. 404-70.000.
Brunn, Klaus; Matura, Eike; Polster, Walter; and Schmitmann, Herbert, to Siemens Aktiengesellschaft. X-Ray diagnostic device for fluoroscopic examination and film exposure. 4,309,613, Cl. 250-409.000.
Buchel, Karl H.: *See*—
Kramer, Wolfgang; Buchel, Karl H.; Timmler, Helmut; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,309,434, Cl. 424-269.000.
Buckley, Frederick P. Camera mounting device. 4,309,095, Cl. 354-81.000.
Buffalo Color Corporation: *See*—
Orloff, Malcolm K.; and White, LeRoy A., 4,309,323, Cl. 260-28.50A.
Bula, Karl; and Schaffner, Bruno, to Sulzer Brothers Limited. Net-like or chain-like anti-slip device for a vehicle wheel. 4,308,906, Cl. 152-219.000.
Bulla, Jackie N.; and Fesperman, Billy B., to Celanese Corporation. Cross lapping apparatus. 4,308,640, Cl. 19-163.000.
Burlington Industries, Inc.: *See*—
Davis, Delbert A., 4,308,896, Cl. 138-126.000.
Burnham, Robert D.; Scifres, Donald R.; and Streifer, William, to Xerox Corporation. Transverse light emitting electroluminescent devices. 4,309,670, Cl. 331-94.50H.
Burroughs Corporation: *See*—
Lockhart, James A., Jr.; and Chang, Shung-huei, 4,309,657, Cl. 324-158.00R.
Burroughs Wellcome Co.: *See*—
Grivsky, Eugene M., 4,309,444, Cl. 424-324.000.
Wolberg, Gerald; and Zimmerman, Thomas P., 4,309,419, Cl. 424-180.000.
Buss, Linus B., to Garrett Corporation, The. Heating system. 4,308,993, Cl. 237-2.00A.
Buus, Jorn L. M.: *See*—
Lassen, Niels; Bogeso, Klaus P.; Hansen, Peter B.; Buus, Jorn L. M.; and Bigler, Allan J., 4,309,429, Cl. 424-248.400.
C. L. Frost & Son, Inc.: *See*—
Weis, Siegfried K., 4,309,063, Cl. 308-187.200.
C. P. Hall Company, The: *See*—
Kuceski, Vincent P.; and Black, Lenoir, 4,309,302, Cl. 252-182.000.
Cadee, Theodorus P. M., to Van Doorne's Transmissie B.V. Hydraulic control for a clutch. 4,308,940, Cl. 192-103.0FA.
Cahill, Arthur L.; and Scott, John L. Solar energy system. 4,309,619, Cl. 290-1.00R.
Calcasola, Richard W.: *See*—
Stack, Timothy F.; and Calcasola, Richard W., 4,309,653, Cl. 323-369.000.
California Institute of Technology: *See*—
Castleman, Kenneth R., 4,309,691, Cl. 340-146.3MA.
Callahan, James L., to Standard Oil Company. Catalytic composition for allylic oxidation of olefins. 4,309,310, Cl. 252-431.00P.
Calspan Corporation: *See*—
Bock, Ditmar H., 4,309,620, Cl. 290-4.00R.
Calzaturificio San Marco Di Santo Tessaro & C.S.n.c.: *See*—
Tessaro, Vanio, 4,308,674, Cl. 36-118.000.
Camlibel, Irfan; Singh, Shobha; Van Uitert, LeGrand G.; and Zydzik, George J., to Bell Telephone Laboratories, Incorporated. Display devices. 4,309,081, Cl. 350-357.000.
Candor, James T., to Emerson Electric Company. Thermally actuatable electrical switch construction and method of making the same. 4,309,685, Cl. 337-408.000.
Canon Kabushiki Kaisha: *See*—
Ito, Masaharu, 4,309,076, Cl. 350-255.000.
Iwakura, Sadao, 4,309,712, Cl. 346-76.0PH.
Kanoto, Masanobu; and Ueda, Shigeru, 4,309,591, Cl. 219-216.000.
Kuwayama, Tetsuro; Suzuki, Takashi; and Matsumoto, Kazuya, 4,309,093, Cl. 354-59.000.
Caputo, William R.; and De Lorenzi, John J., to Westinghouse Electric Corp. Elevator system. 4,308,936, Cl. 187-29.00R.
Cardinal, Rene E., to RCA Corporation. Coaxially mounted high frequency light detector housing. 4,309,717, Cl. 357-74.000.
Carl Zeiss-Stiftung: *See*—
Prinz, Reinhard; and Felle, Karl, 4,309,104, Cl. 356-28.000.
Carlino, Leo T.: *See*—
Harrison, Kenneth J.; and Carlino, Leo T., 4,309,304, Cl. 252-299.630.
Carlson, Richard S., to United States of America, Energy. Process for reproducibly preparing titanium subhydride. 4,309,230, Cl. 149-109.600.
Carlton, Bruce E. Newsprint press orientation device. 4,308,798, Cl. 101-426.000.
Carniglia, Charles K.: *See*—
Apfel, Joseph H.; and Carniglia, Charles K., 4,309,075, Cl. 350-164.000.
Carolina Rubber Hose Company: *See*—
McIntosh, Billy R.; and Jones, Lawrence R., 4,309,232, Cl. 156-64.000.
Carpenter, Osmer S.: *See*—
Roseman, Theodore J.; Carpenter, Osmer S.; Baker, Richard W.; and Ayres, James W., 4,308,867, Cl. 128-260.000.
Carpentier, Urgel R. Dust trap and valve with auxiliary pressure equalizing valve. 4,308,894, Cl. 137-630.150.
Carson, Dennis W.; Gray, Ralph C.; and Luckock, Glenn W., to PPG Industries, Inc. Stable aqueous dispersions of particles of vinylidene fluoride polymer. 4,309,328, Cl. 260-29.60F.
Carter, Cecil O., to Phillips Petroleum Company. Olefin dimerization. 4,309,387, Cl. 422-201.000.
Carter, Herman L., Jr.; Hart, Robert R.; and Weissmann, Gerd F. H., to Bell Telephone Laboratories, Incorporated. Precision optical distance measurement. 4,309,618, Cl. 250-561.000.
Carter, J. Warne, to Ciba-Geigy Corporation. Method and apparatus for longitudinally reinforcing continuously generated plastic pipe. 4,308,999, Cl. 242-7.020.
Carter, James G.: *See*—
Christophorou, Loucas G.; McCorkle, Dennis L.; Maxey, David V.; and Carter, James G., 4,309,307, Cl. 252-372.000.
Carver, Robert W. Dimensional sound recording and apparatus and method for producing the same. 4,309,570, Cl. 179-1.00G.
Cassel, Knut E., to U.S. Philips Corporation. Multi-lobe antenna having a disc-shaped Luneberg lens. 4,309,710, Cl. 343-754.000.
Cassella Aktiengesellschaft: *See*—
Daniek, Georg; Meyer, Artur; and Weidemuller, Wolf, 4,309,178, Cl. 8-551.000.
Daniek, Georg, 4,309,401, Cl. 423-567.00A.
Engelhardt, Friedrich; Riegel, Ulrich; Hille, Martin; and Wittkus, Heinz, 4,309,523, Cl. 526-240.000.
Cassinelli, Giuseppe; Grein, Arpad; Merli, Sergio; and Rivola, Giovanni, to Farmitalia Carlo Erba S.p.A. Preparation of 11-deoxy anthracycline antibiotics. 4,309,503, Cl. 435-78.000.
Castleman, Kenneth R., to California Institute of Technology. Step-oriented pipeline data processing system. 4,309,691, Cl. 340-146.3MA.
Catanese, Salvatore S. Illuminated decoration. 4,309,744, Cl. 362-147.000.
Cavanna, Giancarlo; and Tavoni, Gian Paolo, to Centro Ricerche Fiat S.p.A. Apparatus for detecting climatic conditions favoring the development of Peronosporales. 4,308,687, Cl. 47-1.00R.
CBS Inc.: *See*—
Absmann, Horst L., 4,308,783, Cl. 84-439.000.
Celanese Corporation: *See*—
Bulla, Jackie N.; and Fesperman, Billy B., 4,308,640, Cl. 19-163.000.
Centro Ricerche Fiat S.p.A.: *See*—
Cavanna, Giancarlo; and Tavoni, Gian Paolo, 4,308,687, Cl. 47-1.00R.
Cereghetti, Marco: *See*—
Boller, Arthur; Cereghetti, Marco; and Scherrer, Hanspeter, 4,309,539, Cl. 544-242.000.
Cesar, Edward. Humane animal trap. 4,308,682, Cl. 43-88.000.

Chamberlain Manufacturing Corporation: *See—*
Sims, William H., 4,308,857, Cl. 126-443.000.

Chamberlain, Robert E.; and Cook, Thomas G., to American Sterilizer Company. Establishing and ascertaining desired air removal in steam sterilization. 4,309,381, Cl. 422-3.000.

Chamberlin, David B., to Dictaphone Corporation. Telephone-adapter apparatus for a dictation unit. 4,309,571, Cl. 179-6.090.

Champion International Corporation: *See—*
Stillman, Nathan, 4,309,466, Cl. 428-35.000.

Chang, Leo S.; and DeMore, Anthony, to International Business Machines Corporation. Ribbon configuration for resistive ribbon thermal transfer printing. 4,309,117, Cl. 600-241.100.

Chang, Shung-huei: *See—*
Lockhart, James A., Jr.; and Chang, Shung-huei, 4,309,657, Cl. 324-158.00R.

Chatenet, Bernard: *See—*
Graber, Gerard; Chatenet, Bernard; and Pellenard, Philippe, 4,309,213, Cl. 71-120.000.

Chatterjea, Probir K.: *See—*
Shore, Daniel B.; and Chatterjea, Probir K., 4,308,893, Cl. 137-625.690.

Chemische Werke Huels, AG: *See—*
Bartz, Wilfried, 4,309,260, Cl. 204-181.00R.

Chemische Werke Huels, Aktiengesellschaft: *See—*
Dietrich, Johannes; Dittmann, Walter; Frese, Albert; and Kilian, Wolfgang, 4,309,522, Cl. 526-158.000.
Horlbeck, Gernot; and Mumcu, Salih, 4,309,518, Cl. 525-425.000.

Chen, Charlie C. Process for preparation of near-alpha titanium alloys. 4,309,226, Cl. 148-12.70B.

Chen, Kwei-Lin: *See—*
Lin, Jih-Shyan; Lin, Wuu-Shyong; Chen, Kwei-Lin; and Wen, Chen-Jiing, 4,308,889, Cl. 137-187.000.

Cheng, Jiin-Duey, to Du Pont de Nemours, E. I., and Company. Miticidal, insecticidal, ovicidal and fungicidal N-(N',N'-diarylaminothio)-sulfonamides. 4,309,425, Cl. 424-244.000.

Chester, Arthur W.; Cormier, William E., Jr.; and Stover, William A., to Mobil Oil Corporation. Octane and total yield improvement in catalytic cracking. 4,309,279, Cl. 208-120.000.

Chevallier, Bernard, to FMC Corporation. Rapid disconnect pipe coupling device for cryogenic service. 4,309,049, Cl. 285-18.000.

Chevron Research: *See—*
Kobzina, John W., 4,309,209, Cl. 71-91.000.

Chevron Research Company: *See—*
Blanton, William A., Jr., 4,309,309, Cl. 252-417.000.
Miller, Stephen J., 4,309,276, Cl. 208-109.000.
Mulaskey, Bernard F., 4,309,275, Cl. 208-109.000.

Chibata, Ichiro; Yamada, Shigeki; and Hongo, Chikara, to Tanabe Seiyaku Co., Ltd. Process for the optical resolution of DL-p-hydroxy-phenylglycine. 4,309,362, Cl. 260-501.120.

Child, Francis W., to Child Laboratories Inc. Method of inhibiting mastitis in bovine animals. 4,308,859, Cl. 128-1.00R.

Child Laboratories Inc.: *See—*
Child, Francis W., 4,308,859, Cl. 128-1.00R.

Children's Hospital Medical Center, The: *See—*
Bellows, A. Robert; and Tapper, David, 4,308,874, Cl. 128-745.000.

Chisso Corporation: *See—*
Koga, Isao; Terui, Yohji; and Ohgushi, Masuhito, 4,309,558, Cl. 556-479.000.
Sato, Akihiro; Kikuta, Kazutsune; Matsuda, Kenji; Uwai, Toshihiro; and Hanari, Tohru, 4,309,521, Cl. 526-114.000.

Chiusoli, Gian P.; Giroldini, William; and Salerno, Giuseppe, to Montedison S.p.A. Process for preparing dienoic acids. 4,309,357, Cl. 260-413.000.

Chiyoda, Tsuneyuki, to Diesel Kiki Co., Ltd. Refrigerant quantity detecting device for air conditioning of vehicles. 4,308,725, Cl. 62-129.000.

Christensen, Arthur C., to Scovill Inc. Kitchen mixer having means to instantaneously increase speed when desired. 4,309,631, Cl. 310-50.000.

Christensen, Burton G.; Ratcliffe, Ronald W.; and Salzmann, Thomas N., to Merck & Co., Inc. Process for the preparation of 1-carbapenems and intermediates via trithioorthoacetates. 4,309,346, Cl. 260-239.00A.

Christensen, Burton G.; Leanza, William J.; and Wildonger, Kenneth J., to Merck & Co., Inc. N-Alkyl-N-iminomethyl derivatives of thienamycin. 4,309,438, Cl. 424-274.000.

Christensen, Cindy: *See—*
Rantanen, Alfonso W., 4,308,769, Cl. 81-63.000.

Christopher, Todd J., to RCA Corporation. Error coding for video disc system. 4,309,721, Cl. 358-128.500.

Christophorou, Loucas G.; McCorkle, Dennis L.; Maxey, David V.; and Carter, James G., to United States of America, Energy. Gas mixtures for gas-filled radiation detectors. 4,309,307, Cl. 252-372.000.

Chrysler Corporation: *See—*
Sarto, Jorma O., 4,308,845, Cl. 123-549.000.

Chu, Daniel T.; Martin, Jerry R.; and Thomas, Alford M., to Abbott Laboratories. Antibacterial peptides. 4,309,342, Cl. 260-112.50R.

Chua, David L.; and Merz, William C., to Honeywell Inc. Long life thionyl chloride cell. 4,309,490, Cl. 429-101.000.

Chugai-Duki Kogyo Kabushiki-Kaisha: *See—*
Shibata, Akira, 4,309,461, Cl. 427-259.000.

Chukhanov, Zinovy F.; Chukhanov, Zinovy Z.; Tsuprov, Sergei A.; Samsonov, Vladimir I.; and Karasev, Vadim A. Method for processing pulverized solid fuel. 4,309,197, Cl. 48-197.00R.

Chukhanov, Zinovy Z.: *See—*
Chukhanov, Zinovy F.; Chukhanov, Zinovy Z.; Tsuprov, Sergei A.; Samsonov, Vladimir I.; and Karasev, Vadim A., 4,309,197, Cl. 48-197.00R.

Church & Dwight Co., Inc.: *See—*
Steinke, John J.; and Kaufman, George, 4,308,956, Cl. 206-611.000.

Ciaffone, John T., to Warner-Lambert Company. Razor handle with latch for pivotable cartridge. 4,308,663, Cl. 30-87.000.

Ciba-Geigy Corporation: *See—*
Ackermann, Peter; Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; and Wehrli, Rudolf, 4,309,555, Cl. 556-417.000.
Biollaz, Michel, 4,309,423, Cl. 424-242.000.
Carter, J. Warne, 4,308,999, Cl. 242-7.020.
Eckhardt, Wolfgang, 4,309,436, Cl. 424-272.000.
Ferrini, Pier G., 4,309,353, Cl. 260-343.450.
Gruenfeld, Norbert, 4,309,345, Cl. 260-239.0BB.
Gschwend, Heinz W.; and Huebner, Charles F., 4,309,349, Cl. 260-340.300.
Karrer, Friedrich, 4,309,546, Cl. 546-187.000.
Lacroix, Roger; Adam, Jean-Marie; and Vincze, Janos, 4,309,180, Cl. 8-609.000.
Lange, Burkhart; Agarwal, Suresh C.; Fringeli, Werner; and Gunter, Franz, 4,309,316, Cl. 252-543.000.
Ledouble, Jean-Pierre; and Muller, Klaus, 4,309,360, Cl. 260-453.100.
Petitpierre, Jean C., 4,309,047, Cl. 282-27.500.
Quadranti, Marco; and Gerber, Hans-Rudolf, 4,309,210, Cl. 71-93.000.
Werner, Lincoln H., 4,309,541, Cl. 546-16.000.

Cincinnati Milacron Inc.: *See—*
Perry, Charles B.; Bomkamp, Raymond L.; and Bone, Kendall F., 4,309,600, Cl. 235-375.000.

Clapp, Gerald A.: *See—*
Johnson, George B.; and Clapp, Gerald A., 4,309,773, Cl. 455-62.000.

Clark, Fred G., Jr.: *See—*
Flint, Gene A., 4,309,099, Cl. 354-293.000.

Clavelloux, Noel; and Peynaud, Francois, to Thomson-CSF. Device for measuring in real time sea currents in deep water. 4,308,749, Cl. 73-170.00A.

Cliff, Geoffrey R., to FBC Limited. Sulphonamides useful as pesticides. 4,309,559, Cl. 560-12.000.

Cochard, Pierre; and de Saint-Marie, Bruno, to Regie Nationale des Usines Renault. Method for measuring the rate of recirculation of exhaust gases in an internal combustion engine and device for putting said method into practice. 4,308,846, Cl. 123-568.000.

Codding, Elias H.: *See—*
Hoover, Michael C.; Brazell, Charles R.; Mehta, Shyam B.; Lockett, James F.; and Codding, Elias H., 4,308,959, Cl. 209-563.000.

Coe, Charles G.: *See—*
Jefferson, Donald E.; Coe, Charles G.; Beitchman, Burton D.; and Uffner, Melville W., 4,309,511, Cl. 525-14.000.

Cohen, Joel B., to Shell Container Systems. Electrically conductive container. 4,308,953, Cl. 206-334.000.

Cohen, Sasson; and Fisher, Abraham, to Purdue Frederick Company, The. Preparation of 6-oxa-1-azatricyclo(6.2.2.$0^{2,7}$)dodecane-5-ones. 4,309,544, Cl. 546-94.000.

Coignet S.A.: *See—*
Fougea, Bernard, 4,309,366, Cl. 261-109.000.

Coldren, Larry A.: *See—*
Boyd, Gary D.; Coldren, Larry A.; and Storz, Frederick G., 4,309,267, Cl. 204-298.000.

Colgate-Palmolive Company: *See—*
Gaffar, Abdul, 4,309,410, Cl. 424-57.000.

Coll-Palagos, Miguel; and Benkwitt, Frances C., to Stauffer Chemical Company. Anti-corrosion formulation for toothpastes. 4,309,409, Cl. 424-52.000.

Collins, Anthony R.: *See—*
Harding, Geoffrey L.; McKenzie, David R.; Window, Brian; and Collins, Anthony R., 4,309,261, Cl. 204-192.00R.

Columbia Industries, Inc.: *See—*
Miller, Charles M., Jr.; and Orlando, Samuel J., 4,309,377, Cl. 264-294.000.

Combustion Engineering, Inc.: *See—*
Anthony, Andrew J.; and Martin, Kenneth A., 4,309,251, Cl. 376-446.000.

Commercial Resins Co.: *See—*
Hart, Robert J., 4,308,819, Cl. 118-307.000.

Commissariat a l'Energie Atomique: *See—*
Duchene, Jacques; and Meyer, Robert, 4,309,083, Cl. 350-357.000.

Commonwealth Scientific and Industrial Research Organization: *See—*
Holan, George; and Walser, Reimund, 4,309,350, Cl. 260-340.50R.
Tyler, Ralph J.; Smith, Ian W.; and Edwards, James H., 4,309,270, Cl. 208-8.00R.

Compact Video Sales, Inc.: *See—*
Sayovitz, Michael G., 4,309,708, Cl. 343-713.000.

Compton, Richard A.; and Petraitis, Del J., to NuSil Research. Process for the preparation of alkyl and aryl substituted oligosiloxanes suitable for use as diffusion pump oils. 4,309,557, Cl. 556-453.000.

Condon, William T., to Twin Disc, Incorporated. Universal joint slip spline connection having concentric one-way valves. 4,308,729, Cl. 64-23.000.

Consolidated Controls Corporation: *See—*
Reinicke, Robert H.; and Waller, Henry A., 4,309,022, Cl. 251-61.400.

Container Corporation of America: *See—*
Heisler, Jerome S.; and Starr, Anthony J., 4,308,969, Cl. 220-266.000.
House, Richard F., 4,308,949, Cl. 206-148.000.
Provost, John G., 4,308,948, Cl. 206-45.250.
Ward, Christine E., 4,308,957, Cl. 206-626.000.

Continental Group, Inc., The: *See—*
Irland, Lewis F., 4,308,973, Cl. 220-454.000.

Contraves Limited: *See—*
Frey, Raymond; and Voellmy, Rudolf, 4,309,757, Cl. 364-416.000.

Control Data Corporation: *See—*
Norberg, Gayle R.; and Petrich, Dennis M., 4,309,673, Cl. 332-16.00R.

Conway, Charles S. Tanker vessel construction. 4,308,815, Cl. 114-74.00R.

Cook, Thomas G.: *See—*
Chamberlain, Robert E.; and Cook, Thomas G., 4,309,381, Cl. 422-3.000.

Coombs, Alan: *See—*
Page, James H. R.; and Coombs, Alan, 4,309,228, Cl. 148-120.000.

Cooper, Jerry W.; Holden, Homer N.; Haren, Doyle V.; Haley, John S.; and Somers, M. John, to Dayco Corporation. Reinforced center bearing liner. 4,308,801, Cl. 105-199.00C.

Cooper, William J., to International Telephone and Telegraph Corporation. Fluid pressure responsive apparatus. 4,308,788, Cl. 92-37.000.

Cooper, William W., IV: *See—*
Roos, Martin; Eykamp, William; and Cooper, William W., IV, 4,309,287, Cl. 210-247.000.

Coors, George T., to Ledex, Inc. Push button switch for a controller. 4,309,582, Cl. 200-153.00T.

Copal Company Limited: *See—*
Yoshida, Riichiro, 4,308,738, Cl. 72-112.000.

Corkery, Joseph L.: *See—*
Ryan, John O.; Corkery, Joseph L.; Sudyka, Edward P.; Brill, Gerow D.; Reagan, Anne M.; and Holzgrafe, James R., 4,309,723, Cl. 358-163.000.

Corley, Larry S., to Shell Oil Company. Translucent impact polymers. 4,309,515, Cl. 525-316.000.

Cormier, William E., Jr.: *See—*
Chester, Arthur W.; Cormier, William E., Jr.; and Stover, William A., 4,309,279, Cl. 208-120.000.

Corning Glass Works: *See—*
Beall, George H., 4,309,217, Cl. 501-56.000.
Flannery, James E.; Stempin, John L.; and Wexell, Dale R., 4,309,218, Cl. 501-32.000.
Flannery, James E.; Stempin, John L.; and Wexell, Dale R., 4,309,219, Cl. 501-32.000.

Corrigan, James E., to Heath Consultants Incorporated. Listening device for localizing underground water leakages. 4,309,576, Cl. 179-110.00A.

Cottancin, Gerard, to Societe Lyonnaise de Ventilation Industrielle Solyvent-Ventec. Mould assembly for moulding elastomers. 4,309,163, Cl. 425-543.000.

Cottone, Sam J.: *See—*
Ferris, Michael J.; Disko, Harry; and Cottone, Sam J., 4,308,684, Cl. 46-39.000.

Cottrell, Gerald G. Portable electric automotive engine cranking unit. 4,309,622, Cl. 307-150.000.

Coughran, Samuel J., Jr., to Rome Industries, Inc. Hinge-type offset wheel harrow. 4,308,919, Cl. 172-240.000.

Cousineau, Les R.: *See—*
Rist, Bruno A.; England, Michael D. D.; and Cousineau, Les R., 4,308,941, Cl. 194-1.00C.

Covington, Morris T., to Crutcher Resources Corporation. Liquid pipeline leak detection. 4,308,746, Cl. 73-40.50R.

Cowley, William E.: *See—*
Shannon, Michael A.; and Cowley, William E., 4,309,654, Cl. 324-65.00R.

CPC International Inc.: *See—*
Smith, Jay A.; and Luenser, Susan J., 4,309,505, Cl. 435-193.000.

Crabbe, Pierre, to World Health Organization. Process for synthesizing A-nor and A-nor-18-homo-steroids. 4,309,565, Cl. 560-107.000.

Cragoe, Edward J., Jr.: *See—*
Bock, Mark G.; Cragoe, Edward J., Jr.; and Smith, Robert L., 4,309,540, Cl. 544-405.000.

Craven, John, to Lucas Industries Limited. Liquid fuel injection pumping apparatus. 4,309,151, Cl. 417-206.000.

Craven, Robert B., to Analog Devices, Incorporated. Solid state digital to analog converter. 4,309,693, Cl. 340-347.0DA.

Creusot-Loire: *See—*
Berger, Pierre, 4,308,655, Cl. 29-463.000.

Crichlow, Charles A.: *See—*
Martin, Lawrence L.; Worm, Manfred; and Crichlow, Charles A., 4,309,424, Cl. 424-244.000.

Crone, Jack D.: *See—*
Jelliffe, Roger W.; and Crone, Jack D., 4,308,866, Cl. 128-214.00E.

Crosby, John B., to Beckman Instruments, Inc. Integrating analog-to-digital converter. 4,309,692, Cl. 340-347.0NT.

Croset, Louis P., to Engineering Development (Leeds) Limited. Torsionally resilient coupling. 4,308,728, Cl. 64-11.00R.

Crowley, George C., to Sunbeam Corporation. Flexible self-limiting heating cable. 4,309,596, Cl. 219-549.000.

Crowley, George C., to Sunbeam Corporation. Blanket wire utilizing positive temperature coefficient resistance heater. 4,309,597, Cl. 219-549.000.

Crown City Plating Co.: *See—*
Dillard, David A.; Maguire, Eileen; and Donovan, Lawrence P., 4,309,462, Cl. 427-304.000.

Crown Zellerbach Corporation: *See—*
Hulit, David D.; Hamby, Horace, III; and Hostetler, Ronald E., 4,309,246, Cl. 162-113.000.

Crucible Inc.: *See—*
Holic, John F., 4,309,159, Cl. 425-7.000.

Cruell, John T.: *See—*
Adams, Paul G.; and Cruell, John T., 4,309,020, Cl. 249-204.000.

Crutcher Resources Corporation: *See—*
Covington, Morris T., 4,308,746, Cl. 73-40.50R.

Csaszar, Laszlo: *See—*
Forro, Dezso; Balogh, Dezso; Csaszar, Laszlo; Tolgyesi, Laszlo; and Havalda, Endre, 4,309,748, Cl. 363-65.000.

Cummiskey, William J.: *See—*
Peterson, Anders A.; and Cummiskey, William J., 4,309,041, Cl. 279-1.0ME.

Cuscurida, Michael; Grice, Neal J.; and Speranza, George P., to Texaco Inc. Modification of amino polyols with epoxy resins. 4,309,532, Cl. 536-4.000.

Daddario, Francis E. Pumps operated by the rise and fall of water. 4,309,154, Cl. 417-337.000.

Dahlstrom, Rodney A.; and Rubin, Jacob N., to Stone and Webster Eng. Corp. Alcohol recovery process. 4,309,254, Cl. 203-47.000.

Daikin Kogyo Kabushiki Kaisha: *See—*
Enjo, Naonori; and Aomi, Hideki, 4,309,296, Cl. 252-67.000.

Danforth, Mervin A.; Giles, Julian; and Nakahara, Saburo, to McDonnell Douglas Corporation. Cleaning solvent and method of cleaning a metal surface. 4,309,300, Cl. 252-170.000.

Daniek, Georg; Meyer, Artur; and Weidemuller, Wolf, to Cassella Aktiengesellschaft. Process for isolating sulphur dyestuffs from aqueous crude melts containing sodium polysulphide. 4,309,178, Cl. 8-551.000.

Daniek, Georg, to Cassella Aktiengesellschaft. Process for the manufacture of sulphur which can be recycled. 4,309,401, Cl. 423-567.00A.

Dannels, W. Andrew; and Bainbridge, Robert W., to Hooker Chemicals & Plastics Corp. Method and apparatus for runnerless injection-compression molding thermosetting materials. 4,309,379, Cl. 264-328.200.

D'Antonio, Nicholas F. Electronic integrating system. 4,309,760, Cl. 364-835.000.

Datwyler AG: *See—*
Kurz, Rainer; and Walther, Ruedi, 4,309,167, Cl. 432-22.000.

Dauer, John J., Jr.: *See—*
Grunert, Kurt A.; Dauer, John J., Jr.; and DeVault, Birch L., 4,309,683, Cl. 335-132.000.

Daverio, Jean-Claude: *See—*
Bertolotti, Francis; Daverio, Jean-Claude; and Weber, Georges, 4,308,881, Cl. 134-122.00R.

Daviot, Jean; and Marchais, Michel, to Groupement pour les Activities Atomiques et Advancees. Preparing refractory insulating products having controlled porosity by the wet method. 4,309,371, Cl. 264-43.000.

Davis, Delbert A., to Burlington Industries, Inc. Fabric reinforced hose. 4,308,896, Cl. 138-126.000.

Davis, Donald A. Ground track obliterating device. 4,308,921, Cl. 172-488.000.

Davis, Earl K.; and Hey, Robert W., to Motorola, Inc. Glass and hermetic seal. 4,309,507, Cl. 501-21.000.

Davis, James M., Jr., to Rockwell International Corporation. Variable rate data entry apparatus and method. 4,309,598, Cl. 235-92.0MP.

Davis, Janeece J.: *See—*
Small, Martin H.; Davis, Janeece J.; and Elkins, Peggy C., 4,308,864, Cl. 128-132.00D.

Davis, John W. Method and apparatus for heating a fluid. 4,308,636, Cl. 15-321.000.

Davy Inc.: *See—*
Balke, George L.; and Jablonski, Edward F., 4,308,910, Cl. 165-9.300.

Davy International AG: *See—*
Al-Muddarris, Ghazi R., 4,309,402, Cl. 423-574.00R.

Dawe, Donald L.: *See—*
Gratzek, John B.; Goven, Beverly A.; and Dawe, Donald L., 4,309,416, Cl. 424-88.000.

Dayco Corporation: *See—*
Cooper, Jerry W.; Holden, Homer N.; Haren, Doyle V.; Haley, John S.; and Somers, M. John, 4,308,801, Cl. 105-199.00C.

Dec International, Inc.: *See—*
Hazen, Gretz L., 4,308,791, Cl. 99-459.000.

De Haas, Franciscus C. M.: *See—*
Van Roosmalen, Johannes H. T.; and De Haas, Franciscus C. M., 4,309,638, Cl. 313-447.000.

Dehydro Corporation, The: *See—*
Stannard, Forrest B.; and Highstreet, Edward J., 4,309,292, Cl. 210-792.000.

Delichatsios, Michael A.: *See—*
Probstein, Ronald F.; and Delichatsios, Michael A., 4,309,291, Cl. 210-713.000.

Dell'Agnese, David E.: *See—*
Lillybeck, Norman P.; and Dell'Agnese, David E., 4,309,024, Cl. 266-138.000.

Dellantonio, Ezio F., to Autovox S.p.A. Clutch device, particularly for the manual tuning control in a car radio. 4,308,757, Cl. 74-10.800.

De Lorenzi, John J.: *See—*
Caputo, William R.; and De Lorenzi, John J., 4,308,936, Cl. 187-29.00R.

DeMore, Anthony: *See—*
Chang, Leo S.; and DeMore, Anthony, 4,309,117, Cl. 600-241.100.

DeNeale, Richard J.; Guley, Paul C.; and Milosovich, George, to American Home Products Corporation. Sustained release pharmaceutical compositions. 4,309,404, Cl. 424-21.000.

DeNeale, Richard J.: *See—*
Guley, Paul C.; DeNeale, Richard J.; and Milosovich, George, 4,309,405, Cl. 424-21.000.
Guley, Paul C.; DeNeale, Richard J.; and Milosovich, George, 4,309,406, Cl. 424-21.000.

Denham, Dan F., to Tektronix, Inc. Apparatus and method for producing an image on a sensitized surface. 4,309,720, Cl. 358-75.000.

Denker, Bernard L.; and Maruhnic, Peter, to Hydrocarbon Research, Inc. Coal-oil slurry pipeline process. 4,309,269, Cl. 208-8.0LE.

Denton, Dennis N., to Garlock Inc. Disc brake assembly and method. 4,308,938, Cl. 188-73.450.

Deric, J. Mark, to Otis Elevator Company. Autonomous elevator cab operation. 4,308,935, Cl. 187-29.00R.

de Saint-Marie, Bruno: *See—*
Cochard, Pierre; and de Saint-Marie, Bruno, 4,308,846, Cl. 123-568.000.

Desmarais, Leon O., to Sterling Drug Inc. Paint stripper. 4,309,322, Cl. 260-28.50R.

Dessau, Ralph M., to Mobil Oil Corporation. Selective sorption by zeolites. 4,309,281, Cl. 208-310.00Z.

Deutsche Gold-und Silber-Scheideanstalt Vormals Roessler: *See—*
Mobius, Olaf, 4,308,673, Cl. 36-68.000.

Devaney, Anthony J.: *See—*
Gonsalves, Robert A.; and Devaney, Anthony J., 4,309,602, Cl. 250-201.000.

DeVault, Birch L.: *See—*
Grunert, Kurt A.; Dauer, John J., Jr.; and DeVault, Birch L., 4,309,683, Cl. 335-132.000.

De Villeneuve, Dail A. DC Motor speed controller. 4,309,645, Cl. 318-341.000.

Devlin, Robert M. Plant growth inhibiting and antifungal extract prepared from the vegetative parts of plants of the genera vaccinium and myrica. 4,309,207, Cl. 71-79.000.

Dickson, Donald L.; and Dickson, Steven L. Gutter broom assembly for a street sweeping machine. 4,308,632, Cl. 15-87.000.

Dickson, Howard K.: *See—*
Patrick, E. Vincent; Dickson, Howard K.; and Dunmire, Howard L., 4,309,066, Cl. 316-19.000.

Dickson, Steven L.: *See—*
Dickson, Donald L.; and Dickson, Steven L., 4,308,632, Cl. 15-87.000.

Dictaphone Corporation: *See—*
Chamberlin, David B., 4,309,571, Cl. 179-6.090.

Didier Engineering GmbH: *See—*
Beck, Kurt-Gunther; Habermehl, Diethard; Kucharzyk, Werner; and Siebert, Werner, 4,309,253, Cl. 201-30.000.

Diesel Kiki Co., Ltd.: *See—*
Chiyoda, Tsuneyuki, 4,308,725, Cl. 62-129.000.

Dietrich, Herbert: *See—*
McAllister, Lawrence E.; and Dietrich, Herbert, 4,309,527, Cl. 528-138.000.

Dietrich, Johannes; Dittmann, Walter; Frese, Albert; and Kilian, Wolfgang, to Chemische Werke Huels, Aktiengesellschaft. Process for the production of extensively amorphous butene-1-propene-ethene terpolymers having a high softening point. 4,309,522, Cl. 526-158.000.

Diffenderfer, Robert E.: *See—*
Handley, Edward W.; Hammond, Richard E.; and Diffenderfer, Robert E., 4,308,886, Cl. 137-365.000.

Di Forte, Marie A.; Papuchon, Michel; and Puech, Claude, to Thomson-CSF. Multiple laser having a distributed resonator. 4,309,667, Cl. 331-94.50H.

Dillard, David A.; Maguire, Eileen; and Donovan, Lawrence P., to Crown City Plating Co. Conditioning of caprolactam polymers for electroless plating. 4,309,462, Cl. 427-304.000.

Dingus, George: *See—*
Gillespie, Andrew J.; and Dingus, George, 4,308,776, Cl. 83-344.000.

Dinulescu, Horia A.: *See—*
Sanders, Nicholas A.; and Dinulescu, Horia A., 4,308,915, Cl. 165-166.000.

Dinwiddie, John M., Jr., to International Business Machines Corp. Data interface mechanism for interfacing bit-parallel data buses of different bit width. 4,309,754, Cl. 364-200.000.

Dionne, Gervais: *See—*
Asselin, Andre A.; Humber, Leslie G.; Dionne, Gervais; Revesz, Clara; and Failli, Amedeo, 4,309,348, Cl. 260-326.280.

Disko, Harry: *See—*
Ferris, Michael J.; Disko, Harry; and Cottone, Sam J., 4,308,684, Cl. 46-39.000.

Dismukes, Newton B. Buoyant tubulars and method for installing same in a well bore. 4,308,917, Cl. 166-381.000.

Dittmann, Walter: *See—*
Dietrich, Johannes; Dittmann, Walter; Frese, Albert; and Kilian, Wolfgang, 4,309,522, Cl. 526-158.000.

Doane, Maurice S. Lawn mower power take-off and accessories. 4,308,676, Cl. 37-43.00L.

Dodge, William B., III; and Allen, Ralph O., to University of Virginia Alumni Patents Foundation. Metastable energy transfer for analytical luminescence. 4,309,187, Cl. 23-232.00E.

Doi, Keiichiro; and Kashiwagi, Toshihiro, to Sharp Kabushiki Kaisha. Error alarm system in a microwave oven. 4,309,585, Cl. 219-10.55B.

Dombrowski, Jerome P.: *See—*
Mulkins, George F.; Dombrowski, Jerome P.; and Isliker, Gaston R., 4,309,738, Cl. 361-253.000.

Domtar Inc.: *See—*
Nguyen, Xuan T., 4,309,393, Cl. 423-244.000.

Donovan, Lawrence P.: *See—*
Dillard, David A.; Maguire, Eileen; and Donovan, Lawrence P., 4,309,462, Cl. 427-304.000.

Dorner, Armin. Method for cracking hydrocarbons. 4,309,271, Cl. 208-57.000.

Dostrovsky, Israel: *See—*
Epstein, Michael; and Dostrovsky, Israel, 4,309,257, Cl. 204-56.00R.

Doteuchi, Masami: *See—*
Hirai, Kentaro; Ishiba, Teruyuki; Matsutani, Shigeru; Makino, Itsuo; Fujishita, Toshio; Doteuchi, Masami; and Otani, Koichi, 4,309,433, Cl. 424-266.000.

Double A Products Co.: *See—*
Loup, Ronald L., 4,308,891, Cl. 137-551.000.

Doura, Fumihiro: *See—*
Nakabayashi, Masamitsu; Doura, Fumihiro; and Furukawa, Yuzo, 4,309,525, Cl. 528-487.000.

Dow Chemical Company, The: *See—*
Goralski, Christian T., 4,309,554, Cl. 549-62.000.
Ishibe, Nobuyuki; and Metcalf, Thomas G., 4,309,301, Cl. 252-172.000.
Pezzoli, Paul A., 4,309,477, Cl. 428-378.000.
Wilson, Charles A., 4,309,440, Cl. 424-304.000.
Wilson, Charles A.; and Werner, John A., 4,309,548, Cl. 546-345.000.

Dow Corning Corporation: *See—*
Blizzard, John D., 4,309,520, Cl. 525-477.000.

Drabek, Jozef: *See—*
Ackermann, Peter; Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; and Wehrli, Rudolf, 4,309,555, Cl. 556-417.000.

Draper, Charles W.; and Legatti, Raymond H., to Square D Company. Ground fault receptacle. 4,309,681, Cl. 335-18.000.

Drayton, Walker E., to Acco Industries Inc. Safety hook. 4,309,052, Cl. 294-82.00R.

Dreishev, Igor I.: *See—*
Zitser, Vitaly A.; Melnikov, Alexandr V.; Bachelis, Leonid V.; Shishkin, Nikolai K.; Morozov, Jury E.; Ivanov, Vladimir A.; Olshansky, Semen A.; Dreishev, Igor I.; Stolyar, Eduard A.; Kushelman, Vladimir S.; Shartner, Eduard G.; Abaskalov, Vladimir D.; and Levinson, Vladimir A., 4,308,909, Cl. 164-207.000.

Drewett, Robert J.: *See—*
James, James R.; James, William; and Drewett, Robert J., 4,309,707, Cl. 343-895.000.

Dubeck, Michael: *See—*
Hargis, Duane C.; and Dubeck, Michael, 4,309,314, Cl. 252-466.00B.

Dubuit, Jean-Louis, to Machines Dubuit Societe Anonyme. Drum printing machines having drive means with freewheel and crank-connecting rod system. 4,308,792, Cl. 101-38.00A.

Duchene, Jacques; and Meyer, Robert, to Commissariat a l'Energie Atomique. Electrode for an electrolytic cell particularly for electrolytic display cells and process of manufacture. 4,309,083, Cl. 350-357.000.

Duffey, Craig L.: *See—*
Schieser, Warren J.; and Duffey, Craig L., 4,308,955, Cl. 206-509.000.

Dugast, Alain: *See—*
Brec, Raymond; Le Mehaute, Alain; and Dugast, Alain, 4,309,491, Cl. 429-112.000.

Dunmire, Howard L.: *See—*
Patrick, E. Vincent; Dickson, Howard K.; and Dunmire, Howard L., 4,309,066, Cl. 316-19.000.

Du Pont de Nemours, E. I., and Company: *See—*
Cheng, Jiin-Duey, 4,309,425, Cl. 424-244.000.
Graham, Boynton, 4,309,331, Cl. 260-30.60R.
Hoffman, Henry A., Jr., 4,309,475, Cl. 428-370.000.
Holyoke, Caleb W., Jr., 4,309,358, Cl. 260-429.700.
Sandberg, Harry W., 4,308,710, Cl. 53-433.000.

Durand, Francois; and Besse, Lucien, to S.A. Lipsudest. Protection against the freezing of solar collectors. 4,308,856, Cl. 126-418.000.

Dutt, Herbert V., to Sun Coast Plastic Closures, Inc. Unitary cap of two dissimilar materials. 4,308,965, Cl. 215-345.000.

Dworak, Wilhelm: *See—*
Grabow, Kurt; Mahl, Willy; Muller, Karl-Heinz; Kochendorfer, Heinrich; Bertsch, Dieter; Mayer, Siegfried; Anhenn, Jorg; and Dworak, Wilhelm, 4,309,158, Cl. 418-132.000.

Dynapol: *See—*
Keeley, Donald E., 4,309,543, Cl. 546-76.000.

Dyneer Corporation: *See—*
Sproul, Nolte V., 4,309,174, Cl. 474-135.000.

Dzus Fastener Co., Inc.: *See—*
Schenk, Peter, 4,308,646, Cl. 24-221.00R.

Eastman Kodak Company: *See—*
Harvey, Donald M., 4,309,089, Cl. 354-23.00D.
Huguenard, Albert P.; and Favre, Michel J., 4,309,501, Cl. 430-569.000.
Kiefer, John E., 4,309,186, Cl. 23-230.00R.
Lelental, Mark; and Sandhu, Mohammad A., 4,309,497, Cl. 430-48.000.
Sethi, Gurdip S., 4,309,096, Cl. 354-121.000.

Ebara, Toshio: *See—*
Abe, Ichiro; Suzuki, Takashi; and Ebara, Toshio, 4,308,818, Cl. 118-211.000.
Echlin Manufacturing Company, The: *See—*
Wiegand, John R., 4,309,628, Cl. 307-419.000.
Ecker, Amir L., to Atlantic Richfield Company. Heat pump employing optimal refrigerant compressor for low pressure ratio applications. 4,308,723, Cl. 62-235.100.
Eckhardt, Wolfgang, to Ciba-Geigy Corporation. 3'(3,5-Dichlorophenyl)-spiro(3-oxabicyclоc[3.1.0]hexane)-6,5'-oxazolidine-2',4'-dione. 4,309,436, Cl. 424-272.000.
Eckstrom, William R.: *See—*
Tenney, Robert I.; and Eckstrom, William R., 4,309,388, Cl. 422-304.000.
Ed. Zublin Aktiengesellschaft: *See—*
Hahn, Volker; and Widmann, Horst, 4,308,933, Cl. 181-210.000.
Edwards, James H.: *See—*
Tyler, Ralph J.; Smith, Ian W.; and Edwards, James H., 4,309,270, Cl. 208-8.00R.
Egawa, Takeshi: *See—*
Hara, Kyoichi; Yamazaki, Yasuo; and Egawa, Takeshi, 4,309,078, Cl. 350-286.000.
Egger, Caspar; and Krebser, Rudolf, to Netstal-Maschinen AG. Working machine, particulary an injection-molding machine having a motive system which produces a sequence of regularly recurrent inertia forces. 4,309,164, Cl. 425-589.000.
Eggmann, Jean; and Hartmann, Max, to BBC Brown, Boveri & Company, Ltd. Axial thrust bearing. 4,309,144, Cl. 415-105.000.
Eheim, Franz, to Robert Bosch GmbH. Fuel injection pump for supercharged diesel internal combustion engines, in particular a distributor-type injection pump. 4,308,834, Cl. 123-383.000.
Ehrsam, Ruedi, to Eltreva AG. Pressure-relieving facade. 4,308,695, Cl. 52-1.000.
Eiger Engineering Limited: *See—*
Wood, Richard J., 4,308,998, Cl. 241-101.00B.
Eikonix Corportation: *See—*
Gonsalves, Robert A.; and Devaney, Anthony J., 4,309,602, Cl. 250-201.000.
Eisai Co., Ltd.: *See—*
Nomoto, Seiichiro; Ikuta, Hironori; Machida, Yoshimasa; Negi, Shigeto; Sugiyama, Isao; Yamauchi, Hiroshi; Nakatsuka, Kenro; and Saito, Isao, 4,309,354, Cl. 260-345.200.
Eisenberg, Abraham. Brush bristle cleaning system. 4,308,634, Cl. 15-142.000.
Eizonas, Thomas S. Ceramic parts for stringed musical instruments. 4,308,784, Cl. 84-452.00R.
Elbe, Maximo. Brilliant-cut stone. 4,308,727, Cl. 63-32.000.
Eli Lilly and Company: *See—*
Garbrecht, William L., 4,309,446, Cl. 424-358.000.
Gesellchen, Paul D., 4,309,343, Cl. 260-112.50E.
Kastner, Ralph E.; and Hamill, Robert L., 4,309,504, Cl. 435-118.000.
Squires, Robert W., 4,309,506, Cl. 435-291.000.
Svoboda, Gordon H., 4,309,431, Cl. 424-257.000.
Wikel, James H., 4,309,258, Cl. 204-158.00R.
El-Kareh, Badih, to International Business Machines Corporation. Bipolar dynamic memory cell. 4,309,716, Cl. 357-50.000.
Elkins, Peggy C.: *See—*
Small, Martin H.; Davis, Janeece J.; and Elkins, Peggy C., 4,308,864, Cl. 128-132.00D.
Ellwanger, Richard E.: *See—*
Smith, Eugene L., Jr.; Poulos, Andrew C.; and Ellwanger, Richard E., 4,309,282, Cl. 209-166.000.
Elsinger, Richard R. Signal flag for newspaper container. 4,308,989, Cl. 232-34.000.
Eltreva AG: *See—*
Ehrsam, Ruedi, 4,308,695, Cl. 52-1.000.
Emerson Electric Co.: *See—*
Bischoff, Robert F., 4,309,062, Cl. 308-29.000.
Candor, James T., 4,309,685, Cl. 337-408.000.
Peinetti, Donald L.; and Rippelmeyer, Dennis M., 4,308,991, Cl. 236-46.00R.
EMI Limited: *See—*
Fetter, Richard W., 4,309,637, Cl. 313-60.000.
Enenkel, Hans-Joachim: *See—*
Radunz, Hans-Eckart; Orth, Dieter; Baumgarth, Manfred; Schliep, Hans-Jochen; and Enenkel, Hans-Joachim, 4,309,441, Cl. 424-305.000.
Energy Recovery Research Group, Inc.: *See—*
Rotter, Franz, 4,309,195, Cl. 48-76.000.
Engelhard Minerals & Chemicals Corporation: *See—*
Bartholic, David B., 4,309,274, Cl. 208-80.000.
Engelhardt, Friedrich; Riegel, Ulrich; Hille, Martin; and Wittkus, Heinz, to Cassella Aktiengesellschaft. Water-soluble copolymer of acrylamidomethylpropanesulfonic acids salts. 4,309,523, Cl. 526-240.000.
Engelsmann, Dieter: *See—*
Stemme, Otto; Lermann, Peter; Wagner, Karl; Engelsmann, Dieter; and Schroder, Rolf, 4,309,097, Cl. 354-173.000.
Engineering Development (Leeds) Limited: *See—*
Croset, Louis P., 4,308,728, Cl. 64-11.00R.
Engineering Enterprises, Inc.: *See—*
Fox, Fred K., 4,308,927, Cl. 175-107.000.
England, Michael D. D.: *See—*
Rist, Bruno A.; England, Michael D. D.; and Cousineau, Les R., 4,308,941, Cl. 194-1.00C.
Enjo, Naonori; and Aomi, Hideki, to Daikin Kogyo Kabushiki Kaisha. Refrigerant mixture. 4,309,296, Cl. 252-67.000.
Enka AG: *See—*
Lange, Wolfgang; and Gerlach, Klaus, 4,309,463, Cl. 427-343.000.
Enright, Dorothy P.: *See—*
Lucas, James M.; Perricone, Alphonse C.; and Enright, Dorothy P., 4,309,329, Cl. 260-29.6TA.
Enso-Gutzeit Osakeyhtio: *See—*
Vikio, Pentti; Lankinen, Matti; and Kyytsonen, Juhani, 4,309.283, Cl. 209-211.000.
Epstein, Michael; and Dostrovsky, Israel, to Yeda Research & Development Company Ltd. Novel process for the production of optically selective surfaces. 4,309,257, Cl. 204-56.00R.
Erdos, Adorjan: *See—*
Ghyczy, Miklos; Ritzmann, Gotz; Erdos, Adorjan; and Etschenberg, Eugen, 4,309,420, Cl. 424-199.000.
Ghyczy, Miklos; Ritzmann, Gotz; Erdos, Adorjan; and Etschenberg, Eugen, 4,309,421, Cl. 424-199.000.
Ernsberger, Fred M., to PPG Industries, Inc. Method for making stained glass photomasks from photographic emulsion. 4,309,495, Cl. 430-5.000.
Ernst Leitz Wetzlar GmbH: *See—*
Hahn, Herbert; Jacoby, Hans-Dieter; Jung, Richard; and Schuster, Erich, 4,308,666, Cl. 33-166.000.
ESAB Aktiebolag: *See—*
Boden, Knut F. I.; Henningsen, Christian J.; and Koster, Arvo, 4,309,642, Cl. 318-113.000.
Esselte Pendaflex Corporation: *See—*
Becker, Werner; Holland-Letz, Gunter; and Volk, Heinrich, 4,308,797, Cl. 101-292.000.
Essilor International: *See—*
Lhospice, Bernard, 4,309,086, Cl. 351-140.000.
Estavoyer, Bernard J., to Testut-Aequitas. Integral parallelogram charge receiver and capacitive transducer. 4,308,929, Cl. 177-210.00C.
Estel Hoesch Werke Aktiengesellschaft: *See—*
Schmidt, Ulrich, 4,308,793, Cl. 101-44.000.
Etablissements Montabert S.A.: *See—*
Montabert, Roger, 4,308,926, Cl. 173-162.00R.
Ethyl Corporation: *See—*
Hargis, Duane C.; and Dubeck, Michael, 4,309,314, Cl. 252-466.00B.
Etschenberg, Eugen: *See—*
Ghyczy, Miklos; Ritzmann, Gotz; Erdos, Adorjan; and Etschenberg, Eugen, 4,309,420, Cl. 424-199.000.
Ghyczy, Miklos; Ritzmann, Gotz; Erdos, Adorjan; and Etschenberg, Eugen, 4,309,421, Cl. 424-199.000.
Ettema, Ernst; and Benraad, Coenraad J. B., to Wavin B.V. Crates. 4,308,966, Cl. 220-21.000.
Eubanks, Jerry D.; and Rose, Charles F., to Samsonite Corporation. Luggage case with brace. 4,308,939, Cl. 190-41.00R.
Eutectic Corporation: *See—*
Rotolico, Anthony J., 4,308,996, Cl. 239-290.000.
Evans, Thomas C., Jr.: *See—*
Lenihan, Harry J., Jr.; and Evans, Thomas C., Jr., 4,309,286, Cl. 210-198.200.
Exxon Production Research Company: *See—*
Hoerger, Carl R.; and Smith, Brian W., 4,308,884, Cl. 137-14.000.
Exxon Research & Engineering Co.: *See—*
Harrison, Kenneth J.; and Carlino, Leo T., 4,309,304, Cl. 252-299.630.
Moss, Gerald, 4,309,198, Cl. 48-197.00R.
Ryan, Douglas G.; and Watridge, Derek J., 4,309,288, Cl. 210-39.00S.
Sawyer, Willard H., 4,309,278, Cl. 208-111.000.
Eykamp, William: *See—*
Roos, Martin; Eykamp, William; and Cooper, William W., IV, 4,309,287, Cl. 210-247.000.
Facius, Walter P. Tennis training device. 4,309,032, Cl. 273-29.00A.
Fahmi, Ibrahim. Support rod for multiple clothes hangers. 4,308,962, Cl. 211-118.000.
Failli, Amedeo: *See—*
Asselin, Andre A.; Humber, Leslie G.; Dionne, Gervais; Revesz, Clara; and Failli, Amedeo, 4,309,348, Cl. 260-326.280.
Falconieri, Remo: *See—*
Adamoli, Contardo; and Falconieri, Remo, 4,308,794, Cl. 101-93.030.
Fan, John C. C.; and Zieger, Herbert J., to Massachusetts Institute of Technology. Method of crystallizing amorphous material with a moving energy beam. 4,309,225, Cl. 148-1.500.
Farinon Corporation: *See—*
Wilkens, Mark W., 4,309,771, Cl. 375-58.000.
Farmitalia Carlo Erba S.p.A.: *See—*
Cassinelli, Giuseppe; Grein, Arpad; Merli, Sergio; and Rivola, Giovanni, 4,309,503, Cl. 435-78.000.
Farooq, Saleem: *See—*
Ackermann, Peter; Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; and Wehrli, Rudolf, 4,309,555, Cl. 556-417.000.
Farquharson, Graeme J.: *See—*
Serban, Alexander; Farquharson, Graeme J.; Bird, Graham J.; and Lydiate, Jack, 4,309,211, Cl. 71-93.000.
Fauth, Otto; and Hofle, Lothar, to Otto Bilz, Werkzeugfabrik. Quick-change chuck. 4,309,042, Cl. 279-75.000.
Favre, Michel J.: *See—*
Huguenard, Albert P.; and Favre, Michel J., 4,309,501, Cl. 430-569.000.

Fay, Robert F., to Murray Corporation. Convoluted hose clamps. 4,308,648, Cl. 24-274.00R.

FBC Limited: *See—*
Cliff, Geoffrey R., 4,309,559, Cl. 560-12.000.

Federal-Mogul Corporation: *See—*
Senft, Charles R., 4,308,734, Cl. 72-3.000.

Federal Paper Board Company, Inc.: *See—*
Hanes, Harry R., 4,308,995, Cl. 229-52.00B.
Manizza, Guelfo A.; and Brown, William M., 4,308,985, Cl. 229-31.00R.

Fedulov, Alexandr I.: *See—*
Vikhlyaev, Alexandr A.; Nosikov, Georgy M.; Semenov, Nikolai I.; and Fedulov, Alexandr I., 4,308,922, Cl. 173-18.000.

Feldman, Steven: *See—*
Brandewie, Joseph E.; Feldman, Steven; and Jackson, Mark F., 4,308,659, Cl. 29-748.000.

Feldstein, Nathan. Colloidal compositions for electroless deposition stabilized by thiourea. 4,309,454, Cl. 427-97.000.

Felix Schoeller Jr. GmbH & Co. KG: *See—*
Sack, Wieland; Anthonsen, Reiner; and Kertesz, Ferencz, 4,309,486, Cl. 428-511.000.

Felle, Karl: *See—*
Prinz, Reinhard; and Felle, Karl, 4,309,104, Cl. 356-28.000.

Fellows, David M., to GTE Laboratories Incorporated. Digital energy line sensor. 4,309,664, Cl. 328-140.000.

Ferrini, Pier G., to Ciba-Geigy Corporation. Benzopyrane derivatives. 4,309,353, Cl. 260-343.450.

Ferris, Michael J.; Disko, Harry; and Cottone, Sam J., to Marvin Glass & Associates. Toy movie camera. 4,308,684, Cl. 46-39.000.

Ferrofluidics Corporation: *See—*
Pierrat, Michel A., 4,309,040, Cl. 277-80.000.

Fesperman, Billy B.: *See—*
Bulla, Jackie N.; and Fesperman, Billy B., 4,308,640, Cl. 19-163.000.

Fetter, Richard W., to EMI Limited. Rotating anode X-ray tube. 4,309,637, Cl. 313-60.000.

Fiber Materials, Inc.: *See—*
McAllister, Lawrence E.; and Dietrich, Herbert, 4,309,527, Cl. 528-138.000.

Fields, Joseph E.; Asculai, Samuel S.; and Johnson, John H., to Monsanto Company. Method of producing immune response by administering polymeric composition. 4,309,413, Cl. 424-78.000.

Finch, Walter G.: *See—*
McLean, William B., 4,309,003, Cl. 244-3.160.
McLean, William B., 4,309,004, Cl. 244-3.160.
McLean, William B., 4,309,005, Cl. 244-3.160.

Finizza, Theodore. Striking device. 4,309,028, Cl. 272-76.000.

Finsterwalder, Kurt: *See—*
Kannegiesser, Reinhard; Guthle, Rainer; and Finsterwalder, Kurt, 4,308,737, Cl. 72-91.000.

Fischer, David A., to Ace Orthopedic Manufacturing, Inc. External fixation device. 4,308,863, Cl. 128-92.00A.

Fischer, Joseph; and Hoyt, John M., to National Distillers & Chemical Corp. Ethylene-vinyl acetate copolymer rubbers. 4,309,332, Cl. 260-40.00R.

Fischer & Porter Co.: *See—*
Appel, Eggert; and Nissen, Peter, 4,308,752, Cl. 73-861.120.

Fischer, Rudolf: *See—*
Mohacsi, Sandor; Fischer, Rudolf; and Raschl, Anton, 4,308,800, Cl. 105-159.000.

Fisher, Abraham: *See—*
Cohen, Sasson; and Fisher, Abraham, 4,309,544, Cl. 546-94.000.

Flannery, James E.; Stempin, John L.; and Wexell, Dale R., to Corning Glass Works. Chemically durable phosphate opal glasses. 4,309,218, Cl. 501-32.000.

Flannery, James E.; Stempin, John L.; and Wexell, Dale R., to Corning Glass Works. Phase separated, non-crystalline opal glasses. 4,309,219, Cl. 501-32.000.

Fleishman, Gregg R. Interconnecting members for enclosures. 4,308,698, Cl. 52-81.000.

Flint, Gene A., to Clark, Fred G., Jr., a part interest. Adjustable apex camera system. 4,309,099, Cl. 354-293.000.

Floyd, Glenn L.; and McElwain, James A., to Remlinger Manufacturing Company. Ground working implement wherein forward frame portion raised before frame support engages ground. 4,308,920, Cl. 172-328.000.

Flueckiger, Peter: *See—*
Schefer, Kurt; and Flueckiger, Peter, 4,309,000, Cl. 242-18.00A.

FMC Corporation: *See—*
Chevallier, Bernard, 4,309,049, Cl. 285-18.000.
Konz, Marvin J.; and Krog, Norman E., 4,309,566, Cl. 560-110.000.
Vadas, Leslie, 4,308,900, Cl. 141-1.000.

Focke, Heinz, to Focke & Pfuhl. Apparatus for folding hinged lid boxes from cardboard blanks and filling them with tinfoil wrapped cigarette blocks. 4,308,708, Cl. 53-137.000.

Focke & Pfuhl: *See—*
Focke, Heinz, 4,308,708, Cl. 53-137.000.

Forro, Dezso; Balogh, Dezso; Csaszar, Laszlo; Tolgyesi, Laszlo; and Havalda, Endre, to BHG Hiradastechnikai Vallalat. DC/DC Stabilized voltage converter unit. 4,309,748, Cl. 363-65.000.

Foster Wheeler Energy Corporation: *See—*
Taylor, Thomas E., 4,308,810, Cl. 110-347.000.

Fougea, Bernard, to Coignet S.A. Induced draft cooling tower with improved inner support structure. 4,309,366, Cl. 261-109.000.

Fougeres, Marc P. A.: *See—*
van Oirschot, Theodorus G. J.; Nijman, Willem; and Fougeres, Marc P. A., 4,308,820, Cl. 118-412.000.

Foulard, Jean; Bentz, Gerard; and Galey, Jean, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Manufacture of metal powder. 4,309,214, Cl. 75-0.50B.

Fox, Fred K., to Engineering Enterprises, Inc. Well drilling tool. 4,308,927, Cl. 175-107.000.

Foye, Thomas E.: *See—*
Arora, Manohar L.; and Foye, Thomas E., 4,309,320, Cl. 260-23.00R.

Frank, Daniel G.: *See—*
Zweig, Richard L.; Schaefer, Jack; and Frank, Daniel G., 4,309,575, Cl. 179-107.0BC.

Freemon, Margaret J. Safety harness device. 4,308,629, Cl. 9-336.000.

Frese, Albert: *See—*
Dietrich, Johannes; Dittmann, Walter; Frese, Albert; and Kilian, Wolfgang, 4,309,522, Cl. 526-158.000.

Frey, Raymond; and Voellmy, Rudolf, to Contraves Limited. Method for classification of signals by comparison with an automatically determined threshold. 4,309,757, Cl. 364-416.000.

Fried, Josef, to University of Chicago, The. Chemical synthesis. 4,309,351, Cl. 260-340.90P.

Fried. Krupp Gesellschaft Mit Beschrankter Haftung: *See—*
Krebs, Gerd; Friedrich, Rainer; and Saul, Hans-Peter, 4,309,161, Cl. 425-115.000.

Friedrich, Rainer: *See—*
Krebs, Gerd; Friedrich, Rainer; and Saul, Hans-Peter, 4,309,161, Cl. 425-115.000.

Friese, Hans-Herbert; Plapper, Jurgen; Ploog, Uwe; and Ruscheinsky, Emil, to Henkel Kommanditgesellschaft auf Aktien. Process for the oiling and impregnation of leather and pelts. 4,309,176, Cl. 8-94.230.

Fringeli, Werner: *See—*
Lange, Burkhart; Agarwal, Suresh C.; Fringeli, Werner; and Gunter, Franz, 4,309,316, Cl. 252-543.000.

Fritz Gegauf Aktiengesellschaft Bernina-Nahmaschinenfabrik: *See—*
Janouschek, Heinz, 4,308,813, Cl. 112-143.000.

Fritz, Richard R., Jr. Pitless connection incorporating pressure relief valve. 4,308,916, Cl. 166-86.000.

Frohberger, Paul-Ernst: *See—*
Kramer, Wolfgang; Buchel, Karl H.; Timmler, Helmut; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,309,434, Cl. 424-269.000.

Fuji Photo Film Co., Ltd.: *See—*
Shinozaki, Fumiaki; Namiki, Tomizo; Kitajima, Masao; Ikeda, Tomoaki; and Mizobuchi, Yuzo, 4,309,713, Cl. 346-135.100.
Shishido, Tadao, 4,309,500, Cl. 430-507.000.
Suzuki, Masaaki; Aonuma, Masashi; and Tamai, Yasuo, 4,309,471, Cl. 428-141.000.
Takagi, Yoshihiro; and Hayashi, Katsumi, 4,309,499, Cl. 430-250.000.

Fujikawa, Kanichi: *See—*
Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Someya, Sinzo; and Sakashita, Nobuyuki, 4,309,562, Cl. 71-108.000.

Fujimori, Ryo: *See—*
Hijikata, Kazuo; and Fujimori, Ryo, 4,308,822, Cl. 118-665.000.

Fujishita, Toshio: *See—*
Hirai, Kentaro; Ishiba, Teruyuki; Matsutani, Shigeru; Makino, Itsuo; Fujishita, Toshio; Doteuchi, Masami; and Otani, Koichi, 4,309,433, Cl. 424-266.000.

Fujitsu Limited: *See—*
Kudo, Osamu, 4,309,626, Cl. 307-303.000.
Toyoda, Kazuhiro, 4,309,762, Cl. 365-179.000.

Fukuda, Takashi: *See—*
Fukuoka, Tatsuhiko; Fukuda, Takashi; and Okamoto, Shinichi, 4,309,064, Cl. 308-237.00R.

Fukuhara, Toru; and Saegusa, Takashi, to Nippon Kogaku K.K. Exposure display device in a camera. 4,309,091, Cl. 354-31.000.

Fukunaga, Yukio, to Nissan Motor Company, Limited. Instrument mounting structure. 4,309,012, Cl. 248-27.100.

Fukuoka, Tatsuhiko; Fukuda, Takashi; and Okamoto, Shinichi, to Taiho Kogyo Co., Ltd. Bearing of an internal combustion engine and process for producing the same. 4,309,064, Cl. 308-237.00R.

Furuitsu, Satoshi: *See—*
Kajikawa, Takashi; Makimura, Minoru; Kunise, Satoru; and Furuitsu, Satoshi, 4,309,227, Cl. 148-16.600.

Furukawa, Yuzo: *See—*
Nakabayashi, Masamitsu; Doura, Fumihiro; and Furukawa, Yuzo, 4,309,525, Cl. 528-487.000.

Furuta, Akihiro: *See—*
Ueno, Katsuji; Inoue, Haruo; and Furuta, Akihiro, 4,309,513, Cl. 525-68.000.

Furuya, Nobuaki; Kino, Yoshihiro; and Miyama, Hiroshi, to Matsushita Electric Industrial Company, Limited. Surface acoustic wave filter. 4,309,679, Cl. 333-195.000.

GAF Corporation: *See—*
Parthasarathy, R.; and Hort, Eugene V., 4,309,355, Cl. 260-346.110.
Parthasarathy, R.; and Hort, Eugene V., 4,309,356, Cl. 260-346.110.
Rajewski, Joseph J., 4,308,702, Cl. 52-519.000.
Sachs, Peter R., 4,309,452, Cl. 427-44.000.

Gaffar, Abdul, to Colgate-Palmolive Company. Non-staining antigingivitis composition. 4,309,410, Cl. 424-57.000.

Galey, Jean: *See—*
Foulard, Jean; Bentz, Gerard; and Galey, Jean, 4,309,214, Cl. 75-0.50B.

Gallagher, Nancy. Cover for air conditioner. 4,308,905, Cl. 150-52.00R.

Gallaher, Patrick J., Sr., to Pat-Air, Inc. Apparatus for removing contaminants from water. 4,309,285, Cl. 210-123.000.

Galmiche, Philippe M.: *See*—
Hivert, Andre R.; and Galmiche, Philippe M., 4,309,220, Cl. 106-84.000.
Ganster, Otto; and Schwindt, Jurgen, to Bayer Aktiengesellschaft. Process for the production of pneumatic tires having particularly high dynamic strength. 4,309,378, Cl. 264-311.000.
Garavaglia, Paul M.; and Gutsche, Henry W., to Monsanto Company. Gas curtain continuous chemical vapor deposition production of semiconductor bodies. 4,309,241, Cl. 156-613.000.
Garbrecht, William L., to Eli Lilly and Company. 5-(Dihydroxyphenoxy)tetrazoles and use as sweeteners for medical compositions. 4,309,446, Cl. 424-358.000.
Garlock Inc.: *See*—
Denton, Dennis N., 4,308,938, Cl. 188-73.450.
Garretson Equipment Co., Inc.: *See*—
Garretson, Keith H., 4,308,843, Cl. 123-525.000.
Garretson, Keith H., to Garretson Equipment Co., Inc. Slow-run system and apparatus for gaseous fueled internal combustion engines. 4,308,843, Cl. 123-525.000.
Garrett Corporation, The: *See*—
Buss, Linus B., 4,308,993, Cl. 237-2.00A.
Gates, Donald C., to Alloway Manufacturing, Inc. Three drum defoliator. 4,308,714, Cl. 56-121.430.
Gazzarrini, Vinicio, to Solis S.r.l. Positioning device for tubular hose. 4,308,980, Cl. 223-43.000.
Gebhart, Siegfried. Apparatus for sawing different materials. 4,308,852, Cl. 125-16.00R.
Gebr. Bode & Co., Firma: *See*—
Horn, Manfred, 4,308,691, Cl. 49-255.000.
Gebr. Kupfer: *See*—
Plumettaz, Gerard; and Kupfer, Joe, 4,309,023, Cl. 254-273.000.
Gebrueder Heller, Maschinenfabrik GmbH: *See*—
Schmid, Karlheinz, 4,309,134, Cl. 409-231.000.
Gefitec S.A.: *See*—
Posso, Patrick, 4,309,010, Cl. 248-168.000.
Geisseler, Max, to Sulzer Brothers Limited. Tubular safety element for closing a flow line. 4,308,885, Cl. 137-67.000.
Gendler, Paul L.; Grant, Barbara D.; and Snyder, Clinton D., to International Business Machines Corporation. Electrochromic recording paper. 4,309,255, Cl. 204-2.000.
General Dynamics Corporation: *See*—
Slysh, Paul, 4,308,699, Cl. 52-108.000.
General Electric Company: *See*—
Brennan, Robert H., 4,309,651, Cl. 323-341.000.
Koster, Walter E.; Ludke, William E.; and Lastrina, Frank A., 4,309,147, Cl. 416-95.000.
Lee, Gim F., Jr., 4,309,514, Cl. 525-92.000.
Vaughn, Howard A., Jr., 4,309,319, Cl. 260-9.000.
Viola, Olivo L., 4,309,145, Cl. 415-170.00R.
General Foods Corporation: *See*—
Ray, George C., III; Otto, Michael J.; and Price, Charles E., 4,308,679, Cl. 40-312.000.
General Motors Corporation: *See*—
Kingsley, Charles A., 4,308,841, Cl. 123-520.000.
Genter, Claude: *See*—
Arnoux, Daniel; Genter, Claude; Aguettaz, Jean; Berthelot, Alain; and Michel, Bernard, 4,309,682, Cl. 335-128.000.
Gentry, Charles B., to Granco Equipment, Inc. Billet heating furnace with pressurized entrance seal. 4,309,171, Cl. 432-163.000.
Geoquest International Ltd.: *See*—
Passmore, Paul R.; and Poggiagliomi, Elio, 4,309,763, Cl. 367-3.000.
Geosource Inc.: *See*—
Hoover, Michael C.; Brazell, Charles R.; Mehta, Shyam B.; Lockett, James F.; and Codding, Elias H., 4,308,959, Cl. 209-563.000.
Gerber, Hans-Rudolf: *See*—
Quadranti, Marco; and Gerber, Hans-Rudolf, 4,309,210, Cl. 71-93.000.
Gerin, Merlin: *See*—
Macaire, Marcel; and Mircovich, Jean-Louis, 4,309,581, Cl. 200-148.00R.
Gerlach, Klaus: *See*—
Lange, Wolfgang; and Gerlach, Klaus, 4,309,463, Cl. 427-343.000.
Gesellchen, Paul D., to Eli Lilly and Company. Pharmacologically active peptides. 4,309,343, Cl. 260-112.50E.
Ghyczy, Miklos; Ritzmann, Gotz; Erdos, Adorjan; and Etschenberg, Eugen, to A. Nattermann & Cie. GmbH. Stable injectable solutions of indoleacetic acid derivatives. 4,309,420, Cl. 424-199.000.
Ghyczy, Miklos; Ritzmann, Gotz; Erdos, Adorjan; and Etschenberg, Eugen, to A. Nattermann & Cie. GmbH. Stabilized parenterally administrable solutions. 4,309,421, Cl. 424-199.000.
Giacopelli, James N.: *See*—
Boros, Victor B.; Giacopelli, James N.; and Papathomas, Thomas V., 4,309,650, Cl. 323-283.000.
Gierhart, Harry D., to Anchor Hocking Corporation. Liquor flask orienter. 4,308,943, Cl. 198-399.000.
Gilbert, Robert E. Accu-press. 4,308,923, Cl. 173-26.000.
Giles, Julian: *See*—
Danforth, Mervin A.; Giles, Julian; and Nakahara, Saburo, 4,309,300, Cl. 252-170.000.
Gillespie, Andrew J.; and Dingus, George, to Philip Morris Incorporated. Web sectioning apparatus with adjustable knife engagement. 4,308,776, Cl. 83-344.000.
Gillette Company, The: *See*—
Bonnema, James V., 4,308,670, Cl. 34-97.000.
Gillis, Robert E. Clip for gripping fabric or the like. 4,308,647, Cl. 24-245.00R.
Gilman, David J.: *See*—
Yellin, Tobias O.; and Gilman, David J., 4,309,435, Cl. 424-269.000.
Gilpatrick, Michael W.; and Pack, Carroll L., to Milliken Research Corporation. Apparatus to pattern brush pile fabric. 4,308,649, Cl. 26-2.00R.
Gilroy, John E., to Nuclear Power Company Limited. Nuclear reactor constructions. 4,309,252, Cl. 376-290.000.
Girodi, Erich; Richter, Gerhard; Neumann, Berthold; Jaschke, Peter; Slabik, Johannes; Weber, Roland; Schmidt, Andrea; Krieg, Peter; Groschel, Lutz; Heynisch, Joachim; Starke, Joachim; Wienold, Dietrich; Scholz, Gunter; and Monch, Eckehard, to VEB Gaskombinat Schwarze Pumpe. Apparatus for input and distribution of gasification medium in a rotary grid generator. 4,309,193, Cl. 48-66.000.
Giroldini, William: *See*—
Chiusoli, Gian P.; Giroldini, William; and Salerno, Giuseppe, 4,309,357, Cl. 260-413.000.
Giulie, Joe D., to Minnesota Mining and Manufacturing Company. Binding element. 4,309,046, Cl. 281-21.00R.
Glass, Joseph: *See*—
Panick, Karl; and Glass, Joseph, 4,309,153, Cl. 417-252.000.
Glyco-Metall-Werke Daelen & Loos GmbH: *See*—
Hodes, Erich; Sternisa, Danilo; and Schneider, Walter, 4,309,474, Cl. 428-328.000.
Godard, Dominique N., to International Business Machines Corp. Method and device for training an adaptive equalizer by means of an unknown data signal in a transmission system using double sideband-quadrature carrier modulation. 4,309,770, Cl. 375-14.000.
Goffney, Lawrence J., Jr.: *See*—
Sanders, Estelle W., and Goffney, Lawrence J., Jr., 4,308,860, Cl. 128-62.00R.
Goldfarb, Adolph E.; and Beck, Stephen C., to Goldfarb, Adolph E. Electronic competitive player response game apparatus. 4,309,030, Cl. 273-1.0GC.
Goldfarb, Adolph E. Action game apparatus with rotating disc dispensing unit. 4,309,035, Cl. 273-237.000.
Goldman, Jeffrey H. Duplicating apparatus with variable scale factor. 4,308,902, Cl. 142-7.000.
Goldman, Mark, to Alpha Industries, Inc. Microstrip "T" type attenuator network. 4,309,677, Cl. 333-81.00A.
Goldwell GmbH, Chemische Fabrik H.E. Dotter: *See*—
Wittersheim, Adam, 4,309,119, Cl. 401-188.00R.
Golzer, Norbert: *See*—
Sigmund, Ludwig; Golzer, Norbert; and Steigerwald, Franz, 4,308,977, Cl. 222-320.000.
Gonner, Winfried; and Huber, Bernhard, to Perkin-Elmer Corporation, The. Fluid activated pump having variable discharge. 4,309,156, Cl. 417-403.000.
Gonsalves, Robert A.; and Devaney, Anthony J., to Eikonix Corportation. Wavefront sensing by phase retrieval. 4,309,602, Cl. 250-201.000.
Goralski, Christian T., to Dow Chemical Company, The. 3-(2-Thiophenesulfonyl)-2-halopropanenitriles. 4,309,554, Cl. 549-62.000.
Gordon, Carroll G. Pressure regulator. 4,308,888, Cl. 137-116.300.
Gordon, Samuel Y., to Tektronix, Inc. Circuit and method for correcting side pincushion distortion and regulating picture width. 4,309,640, Cl. 315-371.000.
Gorman, Richard M. Progressive ratchet rifling in a full gain twist. 4,308,681, Cl. 42-78.000.
Goto, Osamu: *See*—
Watanabe, Masao; Goto, Osamu; and Uozumi, Yasuji, 4,308,842, Cl. 123-520.000.
Goto, Ryuji: *See*—
Yamashita, Keitaro; Goto, Ryuji; and Asanae, Masumi, 4,309,498, Cl. 430-100.000.
Gotting, Joachim; and Zimmermann, Heiner, to Hoechst Aktiengesellschaft. Slats serving as protection against light. 4,309,472, Cl. 428-224.000.
Gould Inc.: *See*—
Wilks, Howard G., 4,309,684, Cl. 337-273.000.
Goven, Beverly A.: *See*—
Gratzek, John B.; Goven, Beverly A.; and Dawe, Donald L., 4,309,416, Cl. 424-88.000.
Graber, Gerard; Chatenet, Bernard; and Pellenard, Philippe, to Rhone Poulenc Agrochimie. Process of encapsulation by interfacial polycondensation. 4,309,213, Cl. 71-120.000.
Grabow, Kurt; Mahl, Willy; Muller, Karl-Heinz; Kochendorfer, Heinrich; Bertsch, Dieter; Mayer, Siegfried; Anhenn, Jorg; and Dworak, Wilhelm, to Robert Bosch GmbH. Gear positive displacement machine with U-shaped supporting element for sealing member. 4,309,158, Cl. 418-132.000.
Graf, Rupprecht: *See*—
Nissen, Reinhard; and Graf, Rupprecht, 4,309,215, Cl. 75-109.000.
Graham, Boynton, to Du Pont de Nemours, E. I., and Company. Surfactant-free acrylic plastisols and organosols compositions. 4,309,331, Cl. 260-30.60R.
Granco Equipment, Inc.: *See*—
Gentry, Charles B., 4,309,171, Cl. 432-163.000.
Grand, Pierre: *See*—
Steinberg, Meyer; Powell, James R.; Takahashi, Hiroshi; Grand, Pierre; and Kouts, Herbert, 4,309,249, Cl. 376-192.000.
Granieri, Michael S., Jr. Novel viewing screen. 4,309,074, Cl. 350-144.000.
Grant, Barbara D.: *See*—
Gendler, Paul L.; Grant, Barbara D.; and Snyder, Clinton D., 4,309,255, Cl. 204-2.000.

Grantland, Gary; and Woodworth, Larry A., to GTE Automatic Electric Labs Inc. Loudspeaking substation circuit. 4,309,573, Cl. 179-81.00B.

Grasselli, Robert K.: *See*—
Suresh, Dev D.; Grasselli, Robert K.; and Orndoff, David A., 4,309,361, Cl. 260-465.300.

Grattan, Henry E.: *See*—
Borovina, Anton; Grattan, Henry E.; and Borovina, Mark, 4,308,990, Cl. 236-10.000.

Gratzek, John B.; Goven, Beverly A.; and Dawe, Donald L., to Research Corporation. Vaccines from taxonomically similar organisms. 4,309,416, Cl. 424-88.000.

Gravert, William H. Anti-static coating on ullage tapes comprising carbon black derived from a rich acetylene flame. 4,309,483, Cl. 428-421.000.

Graves, Rodney J. Animated dental floss dispenser. 4,308,880, Cl. 132-92.00A.

Gray, Ralph C.: *See*—
Carson, Dennis W.; Gray, Ralph C.; and Luckock, Glenn W., 4,309,328, Cl. 260-29.60F.

Grebe, Ingo: *See*—
Roos, Friedrich; Bolz, Johannes; and Grebe, Ingo, 4,308,667, Cl. 34-23.000.

Greco, John R., to Parker-Hannifin Corporation. Flame bonded hose. 4,308,895, Cl. 138-125.000.

Green Cross Corporation, The: *See*—
Ueda, Yasuo; Kagitani, Yoshio; Sako, Eiji; Suyama, Tadakazu; Komatsu, Nobuhiko; and Satoh, Daisuke, 4,309,437, Cl. 424-274.000.

Green, Saul, to Sloan-Kettering Research Institute for Cancer. Anti-tumor agent from human serum and process. 4,309,418, Cl. 424-177.000.

Gregory, David L.: *See*—
Steffen, Robert G.; Gregory, David L.; and Blough, LeVone A., 4,309,140, Cl. 411-264.000.

Grein, Arpad: *See*—
Cassinelli, Giuseppe; Grein, Arpad; Merli, Sergio; and Rivola, Giovanni, 4,309,503, Cl. 435-78.000.

Grice, Neal J.: *See*—
Cuscurida, Michael; Grice, Neal J.; and Speranza, George P., 4,309,532, Cl. 536-4.000.

Grivsky, Eugene M., to Burroughs Wellcome Co. Biologically active amides. 4,309,444, Cl. 424-324.000.

Groeneweg, Willem H., to RCA Corporation. Signal processor for beam-scan velocity modulation. 4,309,725, Cl. 358-242.000.

Groschel, Lutz: *See*—
Girodi, Erich; Richter, Gerhard; Neumann, Berthold; Jaschke, Peter; Slabik, Johannes; Weber, Roland; Schmidt, Andrea; Krieg, Peter; Groschel, Lutz; Heynisch, Joachim; Starke, Joachim; Wienold, Dietrich; Scholz, Gunter; and Monch, Eckehard, 4,309,193, Cl. 48-66.000.

Groupement pour les Activities Atomiques et Advancees: *See*—
Daviot, Jean; and Marchais, Michel, 4,309,371, Cl. 264-43.000.

Groves, David J., to Imperial Chemical Industries Limited. Electrostatic pinning of extruded thermoplastic film. 4,309,368, Cl. 264-22.000.

Gruenfeld, Norbert, to Ciba-Geigy Corporation. Indeno and naphth[1,2-d]azepines. 4,309,345, Cl. 260-239.0BB.

Grunert, Kurt A.; Dauer, John J., Jr.; and DeVault, Birch L., to Westinghouse Electric Corp. Electric control device. 4,309,683, Cl. 335-132.000.

Gschwend, Heinz W.; and Huebner, Charles F., to Ciba-Geigy Corporation. Stereospecific process for preparing epoxybenzodioxans. 4,309,349, Cl. 260-340.300.

Gsell, Laurenz: *See*—
Ackermann, Peter; Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; and Wehrli, Rudolf, 4,309,555, Cl. 556-417.000.

GTE Automatic Electric Labs Inc.: *See*—
Grantland, Gary; and Woodworth, Larry A., 4,309,573, Cl. 179-81.00B.
Sublette, John D.; and Stobbs, William, 4,309,574, Cl. 179-84.00T.

GTE Laboratories Incorporated: *See*—
Fellows, David M., 4,309,664, Cl. 328-140.000.

GTE Products Corporation: *See*—
Anderton, John J., 4,308,657, Cl. 29-566.300.
Hernandez, Rafael J.; Yong, Thomas S.; and Sadoski, Tadius T., 4,308,650, Cl. 29-25.130.

Guibord, Ronald D.; Yetman, Robert G.; and Harris, Richard G., to Honeywell Information Systems Inc. Automatic cash depository. 4,308,804, Cl. 109-24.100.

Guillemot, Gilbert. Electronic alarm circuit. 4,309,695, Cl. 340-514.000.

Guley, Paul C.; DeNeale, Richard J.; and Milosovich, George, to American Home Products Corporation. Sustained release pharmaceutical compositions. 4,309,405, Cl. 424-21.000.

Guley, Paul C.; DeNeale, Richard J.; and Milosovich, George, to American Home Products Corporation. Sustained release pharmaceutical compositions. 4,309,406, Cl. 424-21.000.

Guley, Paul C.: *See*—
DeNeale, Richard J.; Guley, Paul C.; and Milosovich, George, 4,309,404, Cl. 424-21.000.

Gulf Oil Corporation: *See*—
Huemmer, Thomas F.; and Lakshmanan, Pallavoor R., 4,309,524, Cl. 526-284.000.
Huemmer, Thomas F.; and Lakshmanan, Pallavoor R., 4,309,561, Cl. 560-26.000.

Gunter, Franz: *See*—
Lange, Burkhart; Agarwal, Suresh C.; Fringeli, Werner; and Gunter, Franz, 4,309,316, Cl. 252-543.000.

Guppy, David W., to Loewy Robertson Engineering Co., Ltd. Floor plate assembly. 4,308,697, Cl. 52-64.000.

Gursky, Alexandr M.: *See*—
Lisitsa, Evgeny I.; Gursky, Alexandr M.; Kuimov, Vitaly G.; Makazan, Jury S.; Paulsky, Alexandr V.; Reznichenko, Fedor A.; Romanov, Alexandr V.; and Uzorovsky, Efim L., 4,308,745, Cl. 72-453.180.

Guthle, Rainer: *See*—
Kannegiesser, Reinhard; Guthle, Rainer; and Finsterwalder, Kurt, 4,308,737, Cl. 72-91.000.

Gutsche, Henry W.: *See*—
Garavaglia, Paul M.; and Gutsche, Henry W., 4,309,241, Cl. 156-613.000.

Gutshall, Charles E., to Keystone Consolidated Industries, Inc. Concrete anchor. 4,309,135, Cl. 411-17.000.

Guymer, Barry R.: *See*—
Hinton, Kevin; and Guymer, Barry R., 4,308,653, Cl. 29-235.000.

H.M.T., Inc.: *See*—
Thiltgen, Roger W.; Mathews, T. Richard; and Hurst, Walter L., 4,308,968, Cl. 220-222.000.

Haas, Franz, Jr.: *See*—
Haas, Franz, Sr.; Haas, Franz, Jr.; and Haas, Johann, 4,308,790, Cl. 99-380.000.

Haas, Franz, Sr.; Haas, Franz, Jr.; and Haas, Johann. Baking tongs. 4,308,790, Cl. 99-380.000.

Haas, Johann: *See*—
Haas, Franz, Sr.; Haas, Franz, Jr.; and Haas, Johann, 4,308,790, Cl. 99-380.000.

Habermehl, Diethard: *See*—
Beck, Kurt-Gunther; Habermehl, Diethard; Kucharzyk, Werner; and Siebert, Werner, 4,309,253, Cl. 201-30.000.

Hafele, Carl H. Valve structure. 4,309,021, Cl. 251-26.000.

Hafner, Karl E.; and Kohler, Wolfgang, to Klockner-Humboldt-Deutz Aktiengesellschaft. Fuel injection pump for internal combustion engines. 4,308,839, Cl. 123-496.000.

Hagedorn, Hans. Carton blank folding apparatus. 4,308,712, Cl. 53-566.000.

Hagen, Glenn E., to Sea Energy Corporation. Hydraulic motor/pump with variable mechanical advantage. 4,309,152, Cl. 417-218.000.

Hahn, Herbert; Jacoby, Hans-Dieter; Jung, Richard; and Schuster, Erich, to Ernst Leitz Wetzlar GmbH. Linear micrometer. 4,308,666, Cl. 33-166.000.

Hahn, Paul G.: *See*—
Speer, Eugene M.; and Hahn, Paul G., 4,308,976, Cl. 222-78.000.

Hahn, Volker; and Widmann, Horst, to Ed. Zublin Aktiengesellschaft. Overhead sound attenuating cover for roadways and railways. 4,308,933, Cl. 181-210.000.

Haley, John S.: *See*—
Cooper, Jerry W.; Holden, Homer N.; Haren, Doyle V.; Haley, John S.; and Somers, M. John, 4,308,801, Cl. 105-199.00C.

Hall, Scarlette J. Ski equipment carrier. 4,308,982, Cl. 224-202.000.

Hallstrom, Olof A., Jr. Tool for separating end cap sections of telephone cable splice cases. 4,308,661, Cl. 29-764.000.

Halsall, James R.; Larcombe, Michael H.; Robertson, James R.; and Rogers, Mark A., to Imperial Chemical Industries Limited. Driverless vehicle autoguided by light signals and three non-directional detectors. 4,309,758, Cl. 364-424.000.

Hamby, Horace, III: *See*—
Hulit, David D.; Hamby, Horace, III; and Hostetler, Ronald E., 4,309,246, Cl. 162-113.000.

Hamill, Robert L.: *See*—
Kastner, Ralph E.; and Hamill, Robert L., 4,309,504, Cl. 435-118.000.

Hamilton, Brian K., to Allied Chemical Corporation. Method of generating water vapor free gas. 4,309,229, Cl. 149-82.000.

Hamilton, Martin N. Ultra-adjust boring and milling system. 4,309,133, Cl. 408-183.000.

Hammond, Richard E.: *See*—
Handley, Edward W.; Hammond, Richard E.; and Diffenderfer, Robert E., 4,308,886, Cl. 137-365.000.

Hanari, Tohru: *See*—
Sato, Akihiro; Kikuta, Kazutsune; Matsuda, Kenji; Uwai, Toshihiro; and Hanari, Tohru, 4,309,521, Cl. 526-114.000.

Hanchard, Jean-Pierre; and Servais, Charles. Variable fluid media radiation filter. 4,309,080, Cl. 350-312.000.

Handley, Edward W.; Hammond, Richard E.; and Diffenderfer, Robert E., to Handley Industries, Inc. Curb box. 4,308,886, Cl. 137-365.000.

Handley Industries, Inc.: *See*—
Handley, Edward W.; Hammond, Richard E.; and Diffenderfer, Robert E., 4,308,886, Cl. 137-365.000.

Hanes, Harry R., to Federal Paper Board Company, Inc. Carton end closure with integral handle. 4,308,995, Cl. 229-52.00B.

Hanna, Daniel C. Automatic wheel washing apparatus. 4,308,631, Cl. 15-53.00B.

Hannesen, Kurt: *See*—
Bender, Werner; Bergner, Dieter; Hannesen, Kurt; Muller, Wolfgang; and Schulte, Wilfried, 4,309,264, Cl. 204-256.000.

Hansen, Karen: *See*—
Rantanen, Alfonso W., 4,308,769, Cl. 81-63.000.

Hansen, Peter B.: *See*—
Lassen, Niels; Bogeso, Klaus P.; Hansen, Peter B.; Buus, Jorn L. M.; and Bigler, Allan J., 4,309,429, Cl. 424-248.400.

Hara, Kunio: *See*—
Tanaka, Toshie; and Hara, Kunio, 4,309,137, Cl. 411-45.000.

Hara, Kyoichi; Yamazaki, Yasuo; and Egawa, Takeshi, to Minolta Camera Kabushiki Kaisha. Pentagonal prism for camera viewfinder. 4,309,078, Cl. 350-286.000.

Harada, Hikaru; Akiyama, Teruo; and Hiyama, Tuneo, to Nippon Sanso K.K. Apparatus for measuring volatile hydrides. 4,309,385, Cl. 422-83.000.

Harding, Geoffrey L.; McKenzie, David R.; Window, Brian; and Collins, Anthony R., to University of Sydney. Method of and apparatus for reactively sputtering a graded surface coating onto a substrate. 4,309,261, Cl. 204-192.00R.

Hardinge Brothers, Inc.: *See*—
Peterson, Anders A.; and Cummiskey, William J., 4,309,041, Cl. 279-1.0ME.

Haren, Doyle V.: *See*—
Cooper, Jerry W.; Holden, Homer N.; Haren, Doyle V.; Haley, John S.; and Somers, M. John, 4,308,801, Cl. 105-199.00C.

Hargis, Duane C.; and Dubeck, Michael, to Ethyl Corporation. Catalytic composition for the selective formation of ethanol and methyl acetate from methanol and synthesis gas. 4,309,314, Cl. 252-466.00B.

Harnischfeger Corporation: *See*—
Morris, Gary C., 4,309,735, Cl. 361-100.000.

Harper Buffing Machine Co.: *See*—
Harper, John F., 4,308,693, Cl. 51-164.200.

Harper, John F., to Harper Buffing Machine Co. Barrel-finishing apparatus. 4,308,693, Cl. 51-164.200.

Harper, Jon J.; and Pietsch, Stephen J., to Standard Oil Company (Indiana). Separation of cobalt and manganese from trimellitic acid process residue by extraction, pH adjustment, and magnet. 4,309,390, Cl. 423-150.000.

Harris Corporation: *See*—
Taylor, Taliaferro H., Jr., 4,309,769, Cl. 375-1.000.

Harris, Richard G.: *See*—
Guibord, Ronald D.; Yetman, Robert G.; and Harris, Richard G., 4,308,804, Cl. 109-24.100.

Harrison, Kenneth J.; and Carlino, Leo T., to Exxon Research & Engineering Co. Liquid crystal compositions for multiplexed displays. 4,309,304, Cl. 252-299.630.

Harrison, Nelson K.; and Lamb, Dana B. Method of and machine for extruding. 4,308,742, Cl. 72-253.100.

Hart, Robert J., to Commercial Resins Co. System for spraying fluidized powder circumferentially around a pipe joint. 4,308,819, Cl. 118-307.000.

Hart, Robert R.: *See*—
Carter, Herman L., Jr.; Hart, Robert R.; and Weissmann, Gerd F. H., 4,309,618, Cl. 250-561.000.

Hartenstein, Johannes; and Satzinger, Gerhard, to Warner-Lambert Company. Process for the O-methylation of hydroxyaporphines. 4,309,542, Cl. 546-075.000.

Hartmann, Max: *See*—
Eggmann, Jean; and Hartmann, Max, 4,309,144, Cl. 415-105.000.

Hartry, Donald R., to Remo, Incorporated. Laminated head of plastic sheet material and a synthetic fabric material having random fiber orientation. 4,308,782, Cl. 84-414.000.

Harvey, Donald M., to Eastman Kodak Company. Exposure indicating apparatus responsive to film exposure latitude. 4,309,089, Cl. 354-23.00D.

Hasegawa, Akira, to Yoshida Kogyo K.K. Separable slide fastener. 4,308,645, Cl. 24-205.11R.

Hashimoto, Tatsuya; Inagaki, Michio; Irie, Hirosada; and Tukamoto, Susumu, to National Research Institute for Metals. Method and apparatus for electron beam welding. 4,309,589, Cl. 219-121.0ED.

Hashimoto, Toshio: *See*—
Takumi, Shizuo; Hashimoto, Toshio; and Tatsushima, Masaru, 4,309,312, Cl. 252-448.000.

Hau, Luo C. Adjustable digital lock. 4,308,732, Cl. 70-213.000.

Hauf, John M.: *See*—
Millar, Robert J.; Stapleton, Charles E.; and Hauf, John M., 4,308,755, Cl. 73-861.770.

Hauge, Douglas O. Phosphoric acid production. 4,309,395, Cl. 423-320.000.

Hauk, Thomas D., to Hawk Industries, Inc. Adjustable traction wheel tensioning mechanism for an automatic wallboard joint taper. 4,309,238, Cl. 156-575.000.

Haupt, Heinz; and Baudner, Siegfried, to Behringwerke Aktiengesellschaft. Leucine-rich 3,1-S-α_2-glycoprotein, process for isolating it and its use. 4,309,339, Cl. 260-112.00B.

Havalda, Endre: *See*—
Forro, Dezso; Balogh, Dezso; Csaszar, Laszlo; Tölgyesi, Laszlo; and Havalda, Endre, 4,309,748, Cl. 363-65.000.

Havens, Richard C., to Ad-Tech Microwave, Inc. Negative resistance oscillator/amplifier accumulator circuit. 4,309,672, Cl. 331-96.000.

Hawk Industries, Inc.: *See*—
Hauk, Thomas D., 4,309,238, Cl. 156-575.000.

Hay, Wayne W., to Airco, Inc. Interlock system for anesthetic vaporizers. 4,308,865, Cl. 128-200.140.

Hayashi, Hisao, to Kabushiki Kaisha Kawaguchiya Hayashi Juho Kayaku-Ten. Trigger device for automatic gun. 4,308,786, Cl. 89-144.000.

Hayashi, Katsumi: *See*—
Takagi, Yoshihiro; and Hayashi, Katsumi, 4,309,499, Cl. 430-250.000.

Hazen, Gretz L., to Dec International, Inc. Enclosed finishing vat for cheese making. 4,308,791, Cl. 99-459.000.

Head, Brian A., to Whatman Reeve Angel Limited. Method of filtering oil from oil-and-water emulsions. 4,309,289, Cl. 210-649.000.

Heath Consultants Incorporated: *See*—
Corrigan, James E., 4,309,576, Cl. 179-110.00A.

Heeren, Hermann; and Richter, Dietrich, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Cooling tower with elevated heat exchanger elements supported on girders. 4,308,913, Cl. 165-68.000.

Heffernan, Cathy A., to Air Preheater Company, Inc., The. Baghouse with collapsible bag filter assembly. 4,309,200, Cl. 55-341.0NT.

Heide, Helmut; Poeschel, Eva; and Roth, Ulrich, to Battelle-Institut e.V. Implantable bone replacement materials based on calcium phosphate ceramic material in a matrix and process for the production thereof. 4,309,488, Cl. 428-547.000.

Height, Inc.: *See*—
Takahashi, Katsushi, 4,308,778, Cl. 83-751.000.

Hein, Leopold A.; and Myers, William N., to United States of America, National Aeronautics and Space Administration. Amplified wind turbine apparatus. 4,309,146, Cl. 415-2.00R.

Heino, Aarne: *See*—
Poutanen, Matti J.; and Heino, Aarne, 4,309,160, Cl. 425-113.000.

Heinz, Otto; Hoppmann, Helmut; and Henning, Bodo, to Volkswagenwerk Aktiengesellschaft. Vehicle fuel tank having vented internal fuel pump. 4,309,155, Cl. 417-360.000.

Heisler, Jerome S.; and Starr, Anthony J., to Container Corporation of America. Tamper indicating closure structure. 4,308,969, Cl. 220-266.000.

Heitkamp, Dieter, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Magnetically supported particle matrix for accumulating or affecting substances dissolved or finally dispersed in liquids or gas. 4,309,290, Cl. 210-695.000.

Hemex, Inc.: *See*—
Klawatter, Jerome J., 4,308,624, Cl. 3-1.500.

Hemrich, William R.: *See*—
Long, Douglas G.; Hemrich, William R.; and Shaw, Nicholas A., 4,309,595, Cl. 219-370.000.

Henkel Kommanditgesellschaft auf Aktien: *See*—
Friese, Hans-Herbert; Plapper, Jurgen; Ploog, Uwe; and Ruscheinsky, Emil, 4,309,176, Cl. 8-94.230.

Henning, Bodo: *See*—
Heinz, Otto; Hoppmann, Helmut; and Henning, Bodo, 4,309,155, Cl. 417-360.000.

Henningsen, Christian J.: *See*—
Boden, Knut F. I.; Henningsen, Christian J.; and Koster, Arvo, 4,309,642, Cl. 318-113.000.

Henry, Paul S., to Bell Telephone Laboratories, Incorporated. Zero disparity coding system. 4,309,694, Cl. 340-347.0DD.

Herbrechtsmeier, Peter; Steiner, Rudolf; and Vilcsek, Herbert, to Hoechst Aktiengesellschaft. Process for the absorption of nitrous gases. 4,309,396, Cl. 423-393.000.

Hercules Incorporated: *See*—
Majewicz, Thomas G., 4,309,535, Cl. 536-85.000.

Hermann C. Starck Berlin: *See*—
Meyer, Horst, 4,309,389, Cl. 423-63.000.

Hernandez, Rafael J.; Yong, Thomas S.; and Sadoski, Tadius T., to GTE Products Corporation. Method of making a mercury dispenser, getter and shield assembly for a fluorescent lamp. 4,308,650, Cl. 29-25.130.

Hertel, Reinhard. Top with actuator rod. 4,308,685, Cl. 46-66.000.

Heuser, Arthur R.; and Bolstad, Richard, to Inmont Corporation. Flexographic printing on textiles. 4,309,179, Cl. 8-558.000.

Hewlett-Packard Company: *See*—
Reach, Roy W.; Kahn, William M.; and Shapiro, David, 4,309,761, Cl. 364-900.000.

Hey, Robert W.: *See*—
Davis, Earl K.; and Hey, Robert W., 4,309,507, Cl. 501-21.000.

Heyman, Arnold. Hospital utility device. 4,308,642, Cl. 24-306.000.

Heynisch, Joachim: *See*—
Girodi, Erich; Richter, Gerhard; Neumann, Berthold; Jaschke, Peter; Slabik, Johannes; Weber, Roland; Schmidt, Andrea; Krieg, Peter; Groschel, Lutz; Heynisch, Joachim; Starke, Joachim; Wienold, Dietrich; Scholz, Gunter; and Monch, Eckehard, 4,309,193, Cl. 48-66.000.

Highstreet, Edward J.: *See*—
Stannard, Forrest B.; and Highstreet, Edward J., 4,309,292, Cl. 210-792.000.

Hijikata, Kazuo; and Fujimori, Ryo, to Olympus Optical Company Limited. Apparatus for applying sample liquid onto sample bearing film. 4,308,822, Cl. 118-665.000.

Hill, Bernhard, to U.S. Philips Corporation. Magneto-optical light modulator. 4,309,084, Cl. 350-377.000.

Hill, Clifford W., to Union Carbide Corporation. Air cooled gas shielded arc torch. 4,309,588, Cl. 219-75.000.

Hill, Stewart C., to Marconi Company Limited, The. Dual frequency aerial feed arrangements. 4,309,709, Cl. 343-727.000.

Hille, Martin: *See*—
Engelhardt, Friedrich; Riegel, Ulrich; Hille, Martin; and Wittkus, Heinz, 4,309,523, Cl. 526-240.000.

Hillemeier, Bernd, to Hochtief Aktiengesellschaft vorm. Gebruder Helfmann. Method of determining the location, orientation and pattern of reinforcing members in reinforced concrete. 4,309,610, Cl. 250-342.000.

Hines, Joseph: *See*—
Van Ness, David; Hines, Joseph; and Wells, William E., 4,309,365, Cl. 261-29.000.

Hinn, Werner, to RCA Corporation. Dual standard PAL/SECAM receiver circuitry. 4,309,719, Cl. 358-21.00R.

Hinson, Virgil H.: *See*—
Jarman, Davis R.; and Hinson, Virgil H., 4,309,138, Cl. 411-55.000.
Hinton, Kevin; and Guymer, Barry R., to Schlegel (UK) Limited. Apparatus for inserting pile weatherstrip in a groove. 4,308,653, Cl. 29-235.000.
Hirai, Kentaro; Ishiba, Teruyuki; Matsutani, Shigeru; Makino, Itsuo; Fujishita, Toshio; Doteuchi, Masami; and Otani, Koichi, to Shionogi & Co., Ltd. Pyridinecarbonamido-oxy or thio loweralkyl-1-(diloweralkylaminoloweralkyl)benzene and derivatives thereof, compositions containing same and method of using same. 4,309,433, Cl. 424-266.000.
Hirakawa, Hiroshi: *See*—
Ahagon, Asahiro; Misawa, Makoto; Hirakawa, Hiroshi; and Miyasaka, Kazuo, 4,309,318, Cl. 260-5.000.
Hiramatsu, Eizi; Nakagawa, Yasushi; and Sato, Hidenori, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Nippon Denso Kabushiki Kaisha. Device for preventing evaporative fuel loss. 4,308,840, Cl. 123-519.000.
Hirayama, Takao: *See*—
Ukita, Ryoji; and Hirayama, Takao, 4,309,330, Cl. 260-29.70H.
Hiro, Toshiharu: *See*—
Nakano, Shosaburo; Hiro, Toshiharu; Nishiyama, Noboru; Agusa, Kazuo; and Kosho, Masaaki, 4,309,587, Cl. 219-73.110.
Hiroya, Osamu; Ihara, Hiroyuki; and Sanami, Yoshitomo, to Mitsubishi Oil Co., Ltd. Coal-oil mixture. 4,309,191, Cl. 44-51.000.
Hitachi Chemical Company, Ltd.: *See*—
Obara, Mitsuo; Kageyama, Akira; and Uchigasaki, Isao, 4,309,519, Cl. 525-445.000.
Ukita, Ryoji; and Hirayama, Takao, 4,309,330, Cl. 260-29.70H.
Hitachi, Ltd.: *See*—
Sei, Makio; and Miyashita, Kunio, 4,309,635, Cl. 310-211.000.
Tanaka, Hiromichi; Hoshino, Takashi; and Arai, Takao, 4,309,726, Cl. 360-32.000.
Tokuda, Hiroastu; Konno, Akihiko; and Suda, Seiji, 4,309,759, Cl. 364-431.050.
Yamashiro, Osamu, 4,309,665, Cl. 330-264.000.
Yoshida, Masashi; Kawase, Hideyuki; and Shinoda, Tadashi, 4,309,731, Cl. 360-85.000.
Hitachi Medical Corporation: *See*—
Tanaka, Eiichi; Nohara, Norimasa; Tomitani, Takehiro; Ishimatsu, Kenji; and Takami, Katsumi, 4,309,611, Cl. 250-363.00S.
Hitachi Metals, Ltd.: *See*—
Yamashita, Keitaro; Goto, Ryuji; and Asanae, Masumi, 4,309,498, Cl. 430-100.000.
Hivert, Andre R.; and Galmiche, Philippe M., to Office National d'Etudes et de Recherche Aerospatiales. Inorganic adhesive for assembling metallic components. 4,309,220, Cl. 106-84.000.
Hiyama, Tuneo: *See*—
Harada, Hikaru; Akiyama, Teruo; and Hiyama, Tuneo, 4,309,385, Cl. 422-83.000.
Ho, T. L., to SCM Corporation. Process for producing lactones from unsaturated carbonyl compounds. 4,309,352, Cl. 260-343.500.
Hochtief Aktiengesellschaft vorm. Gebruder Helfmann: *See*—
Hillemeier, Bernd, 4,309,610, Cl. 250-342.000.
Hodes, Erich; Sternisa, Danilo; and Schneider, Walter, to Glyco-Metall-Werke Daelen & Loos GmbH. Stratification mass for the production of top surfacing layers. 4,309,474, Cl. 428-328.000.
Hoechst Aktiengesellschaft: *See*—
Adrian, Klaus; and Rosch, Gunter, 4,309,298, Cl. 252-95.000.
Bender, Werner; Bergner, Dieter; Hannesen, Kurt; Muller, Wolfgang; and Schulte, Wilfried, 4,309,264, Cl. 204-256.000.
Gotting, Joachim; and Zimmermann, Heiner, 4,309,472, Cl. 428-224.000.
Herbrechtsmeier, Peter; Steiner, Rudolf; and Vilcsek, Herbert, 4,309,396, Cl. 423-393.000.
Kleber, Rolf, 4,309,510, Cl. 525-6.000.
Koch, Manfred; and Nestler, Hans J., 4,309,547, Cl. 546-301.000.
Schinzel, Erich, 4,309,536, Cl. 542-454.000.
Schonberger, Norbert; Schinzel, Erich; Martini, Thomas; and Rosch, Gunter, 4,309,551, Cl. 548-324.000.
Hoechst-Roussel Pharmaceuticals Incorporated: *See*—
Martin, Lawrence L.; Worm, Manfred; and Crichlow, Charles A., 4,309,424, Cl. 424-244.000.
Hoerger, Carl R.; and Smith, Brian W., to Exxon Production Research Company. Method for transmission of pressure signals through a conduit. 4,308,884, Cl. 137-14.000.
Hoffman, Henry A., Jr., to Du Pont de Nemours, E. I., and Company. Bicomponent acrylic fiber. 4,309,475, Cl. 428-370.000.
Hoffmann, Alexander: *See*—
Pusch, Gunter; and Hoffmann, Alexander, 4,308,882, Cl. 135-1.00R.
Hoffmann-La Roche Inc.: *See*—
Boller, Arthur; Cereghetti, Marco; and Scherrer, Hanspeter, 4,309,539, Cl. 544-242.000.
Hofle, Lothar: *See*—
Fauth, Otto; and Hofle, Lothar, 4,309,042, Cl. 279-75.000.
Holan, George; and Walser, Reimund, to Commonwealth Scientific and Industrial Research Organization. Process of making phenylacrylic esters. 4,309,350, Cl. 260-340.50R.
Holcombe, Cressie E.: *See*—
Kovach, Louis; and Holcombe, Cressie E., 4,309,467, Cl. 428-36.000.
Holden, Homer N.: *See*—
Cooper, Jerry W.; Holden, Homer N.; Haren, Doyle V.; Haley, John S.; and Somers, M. John, 4,308,801, Cl. 105-199.00C.
Holic, John F., to Crucible Inc. Refractory nozzle. 4,309,159, Cl. 425-7.000.
Holland, Beecher J. All-day, all-year solar concentrator. 4,309,079, Cl. 350-292.000.
Holland-Letz, Gunter: *See*—
Becker, Werner; Holland-Letz, Gunter; and Volk, Heinrich, 4,308,797, Cl. 101-292.000.
Holm, Charles H.; Schubert, William L.; and Sitorius, Howard E., to International Harvester Company. Articulated tractor tire illumination arrangement. 4,309,742, Cl. 362-78.000.
Holmes, Richard R., to Phillips Petroleum Co. Laminated armor. 4,309,487, Cl. 428-516.000.
Holyoke, Caleb W., Jr., to Du Pont de Nemours, E. I., and Company. Agricultural stannanamines. 4,309,358, Cl. 260-429.700.
Holzgrafe, James R.: *See*—
Ryan, John O.; Corkery, Joseph L.; Sudyka, Edward P.; Brill, Gerow D.; Reagan, Anne M.; and Holzgrafe, James R., 4,309,723, Cl. 358-163.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Watanabe, Masao; Goto, Osamu; and Uozumi, Yasuji, 4,308,842, Cl. 123-520.000.
Honeywell Inc.: *See*—
Chua, David L.; and Merz, William C., 4,309,490, Cl. 429-101.000.
Stauffer, Norman L., 4,309,603, Cl. 250-204.000.
Honeywell Information System Inc.: *See*—
Negi, Virendra S.; and Peters, Arthur, 4,309,753, Cl. 364-200.000.
Honeywell Information Systems Inc.: *See*—
Guibord, Ronald D.; Yetman, Robert G.; and Harris, Richard G., 4,308,804, Cl. 109-24.100.
Hongo, Chikara: *See*—
Chibata, Ichiro; Yamada, Shigeki; and Hongo, Chikara, 4,309,362, Cl. 260-501.120.
Hooker Chemicals & Plastics Corp.: *See*—
Dannels, W. Andrew; and Bainbridge, Robert W., 4,309,379, Cl. 264-328.200.
Hoover, Michael C.; Brazell, Charles R.; Mehta, Shyam B.; Lockett, James F.; and Codding, Elias H., to Geosource Inc. Roll sorting apparatus. 4,308,959, Cl. 209-563.000.
Hope, Peter; and Mellor, Malcolm, to Akzo N.V. Novel organotin compounds, a process for their preparation and their use as stabilizers for polyvinyl chloride polymers. 4,309,337, Cl. 260-45.75S.
Hoppmann, Helmut: *See*—
Heinz, Otto; Hoppmann, Helmut; and Henning, Bodo, 4,309,155, Cl. 417-360.000.
Horikawa, Mitsuo: *See*—
Yamaguchi, Yoshiharu; and Horikawa, Mitsuo, 4,308,898, Cl. 139-384.00B.
Horlbeck, Gernot; and Mumcu, Salih, to Chemische Werke Huels, Aktiengesellschaft. Molding compositions containing high-molecular weight linear polyester. 4,309,518, Cl. 525-425.000.
Horn, Manfred, to Gebr. Bode & Co., Firma. Apparatus for locking the leaf of a swing door. 4,308,691, Cl. 49-255.000.
Hornle, Reinhold: *See*—
Koll, Jochen; Paulat, Volker; Hornle, Reinhold; Molls, Hans-Heinz; and Nonn, Konrad, 4,309,182, Cl. 8-527.000.
Koll, Jochen; Paulat, Volker; Hornle, Reinhold; Molls, Hans-Heinz; and Nonn, Konrad, 4,309,183, Cl. 8-527.000.
Horrobin, David F., to Verronmay Limited. Method and composition for treating inflammatory disorders. 4,309,415, Cl. 424-85.000.
Hort, Eugene V.: *See*—
Parthasarathy, R.; and Hort, Eugene V., 4,309,355, Cl. 260-346.110.
Parthasarathy, R.; and Hort, Eugene V., 4,309,356, Cl. 260-346.110.
Horton, Donald B. Metered-usage variable-volume air distribution system. 4,308,992, Cl. 236-49.000.
Hoshino, Takashi: *See*—
Tanaka, Hiromichi; Hoshino, Takashi; and Arai, Takao, 4,309,726, Cl. 360-32.000.
Hostetler, Ronald E.: *See*—
Hulit, David D.; Hamby, Horace, III; and Hostetler, Ronald E., 4,309,246, Cl. 162-113.000.
Hou, Kenneth C.; and Ostreicher, Eugene A., to AMF Incorporated. Filter and method of making same. 4,309,247, Cl. 162-149.000.
House, Richard F., to Container Corporation of America. Dispensing carton for small bottles. 4,308,949, Cl. 206-148.000.
Howe, Dorothy E., executrix: *See*—
Howe, Theodore, deceased; and Howe, Dorothy E., executrix, 4,309,013, Cl. 248-346.000.
Howe, Theodore, deceased; and by Howe, Dorothy E., executrix. Freight carrier. 4,309,013, Cl. 248-346.000.
Hoyt, Hazen L., 4th, to Pfizer Inc. Kaolin clay slurries of reduced viscosity. 4,309,222, Cl. 106-288.00B.
Hoyt, John M.: *See*—
Fischer, Joseph; and Hoyt, John M., 4,309,332, Cl. 260-40.00R.
Huber, Bernhard: *See*—
Gonner, Winfried; and Huber, Bernhard, 4,309,156, Cl. 417-403.000.
Huber, Peter; August, Peter; Lampelzammer, Helga; and Primas, Willi, to Wacker-Chemie GmbH. Organic fibers having improved slip properties produced by treatment with organosilicon compounds. 4,309,478, Cl. 428-391.000.
Hudson, Robert B., to Monsanto Company. Method of preparing ultraphosphoric acid. 4,309,394, Cl. 423-317.000.
Huebner, Charles F.: *See*—
Gschwend, Heinz W.; and Huebner, Charles F., 4,309,349, Cl. 260-340.300.
Huemmer, Thomas F.; and Lakshmanan, Pallavoor R., to Gulf Oil Corporation. Anaerobic adhesives compositions. 4,309,524, Cl. 526-284.000.

Huemmer, Thomas F.; and Lakshmanan, Pallavoor R., to Gulf Oil Corporation. Photopolymerizable acrylate monomers. 4,309,561, Cl. 560-26.000.
Hufnagl, Walter. Reinforcing element. 4,308,705, Cl. 52-734.000.
Huguenard, Albert P.; and Favre, Michel J., to Eastman Kodak Company. Crystallization process. 4,309,501, Cl. 430-569.000.
Hulit, David D.; Hamby, Horace, III; and Hostetler, Ronald E., to Crown Zellerbach Corporation. Papermaking apparatus and method. 4,309,246, Cl. 162-113.000.
Humber, Leslie G.: *See—*
Asselin, Andre A.; Humber, Leslie G.; Dionne, Gervais; Revesz, Clara; and Failli, Amedeo, 4,309,348, Cl. 260-326.280.
Humphrey, C. Thomas. Drive box. 4,308,758, Cl. 74-87.000.
Hunter Douglas International N.V.: *See—*
Rijnders, Willem, 4,308,706, Cl. 52-738.000.
Hunter, James P. Multiple elastic band projector. 4,308,850, Cl. 124-19.000.
Hurst, Walter L.: *See—*
Thiltgen, Roger W.; Mathews, T. Richard; and Hurst, Walter L., 4,308,968, Cl. 220-222.000.
Hydrocarbon Research, Inc.: *See—*
Denker, Bernard L.; and Maruhnic, Peter, 4,309,269, Cl. 208-8.0LE.
Hynecek, Jaroslav; and Roberts, Charles G., to Texas Instruments Incorporated. Floating gate amplifier method of operation for noise minimization in charge coupled devices. 4,309,624, Cl. 307-221.00D.
Ibach, Harald, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Electron-impact spectrometer. 4,309,607, Cl. 250-305.000.
Ichiko Industries Limited: *See—*
Takata, Yasunobu, 4,309,740, Cl. 362-66.000.
ICI Americas Inc.: *See—*
Yellin, Tobias O.; and Gilman, David J., 4,309,435, Cl. 424-269.000.
ICI Australia Limited: *See—*
Serban, Alexander; Farquharson, Graeme J.; Bird, Graham J.; and Lydiate, Jack, 4,309,211, Cl. 71-93.000.
Ide, Kenichi: *See—*
Ishii, Hikonori; and Ide, Kenichi, 4,308,741, Cl. 72-239.000.
Ihara, Hiroyuki: *See—*
Hiroya, Osamu; Ihara, Hiroyuki; and Sanami, Yoshitomo, 4,309,191, Cl. 44-51.000.
Iida, Akio; and Miyake, Kimio, to Kabushiki Kaisha Komatsu Seisakusho. Muffler for a vehicle. 4,308,930, Cl. 180-89.200.
Iizuka, Haruhiko: *See—*
Sugasawa, Fukashi; and Iizuka, Haruhiko, 4,308,831, Cl. 123-198.00F.
Ikeda, Hiroshi: *See—*
Okumura, Takeshi; and Ikeda, Hiroshi, 4,308,832, Cl. 123-306.000.
Ikeda, Masaki, to Tomy Kogyo Co., Inc. Toy having appendage capable of moving in two directions. 4,308,686, Cl. 46-129.000.
Ikeda, Tomoaki: *See—*
Shinozaki, Fumiaki; Namiki, Tomizo; Kitajima, Masao; Ikeda, Tomoaki; and Mizobuchi, Yuzo, 4,309,713, Cl. 346-135.100.
Ikeda, Yoshikazu: *See—*
Mori, Hiromichi; Maruyama, Tatsuo; Matsumoto, Jun; and Ikeda, Yoshikazu, 4,309,572, Cl. 179-27.0FE.
Ikegami, Shiro: *See—*
Ishikawa, Akira; Ishida, Yukihito; Ikegami, Shiro; Satoh, Hiroshi; Sato, Ryuichi; Tomisawa, Setuso; and Toyoshima, Shigeru, 4,309,412, Cl. 424-78.000.
Ikuta, Hironori: *See—*
Nomoto, Seiichiro; Ikuta, Hironori; Machida, Yoshimasa; Negi, Shigeto; Sugiyama, Isao; Yamauchi, Hiroshi; Nakatsuka, Kenro; and Saito, Isao, 4,309,354, Cl. 260-345.200.
Illinois Tool Works Inc.: *See—*
Peterson, Francis C., 4,308,817, Cl. 116-215.000.
Imai, Akihiro: *See—*
Suzuki, Takashi; Sumita, Isao; and Imai, Akihiro, 4,309,482, Cl. 428-413.000.
Imai, Hirosuke: *See—*
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Imperial Chemical Industries Limited: *See—*
Groves, David J., 4,309,368, Cl. 264-22.000.
Halsall, James R.; Larcombe, Michael H.; Robertson, James R.; and Rogers, Mark A., 4,309,758, Cl. 364-424.000.
Pinto, Alwyn, 4,309,359, Cl. 518-705.000.
Yellin, Tobias O.; and Gilman, David J., 4,309,435, Cl. 424-269.000.
Inagaki, Michio: *See—*
Hashimoto, Tatsuya; Inagaki, Michio; Irie, Hirosada; and Tukamoto, Susumu, 4,309,589, Cl. 219-121.0ED.
Inagi, Toshio; Muramatsu, Toyojiro; and Nagai, Hidetaka, to Kowa Company Limited. Antiinflammatory analgesic gelled ointment. 4,309,414, Cl. 424-81.000.
Inami, Yasuhiko: *See—*
Yano, Kohzo; Takechi, Sadatoshi; Inami, Yasuhiko; and Uede, Hisashi, 4,308,658, Cl. 29-570.000.
Inamoto, Yoshiaki: *See—*
Takaishi, Naotake; Urata, Kouichi; Inamoto, Yoshiaki; Okamoto, Kikuhiko; and Tsuchiya, Shuichi, 4,309,448, Cl. 424-365.000.
Inmont Corporation: *See—*
Heuser, Arthur R.; and Bolstad, Richard, 4,309,179, Cl. 8-558.000.
Inohara, Masanobu: *See—*
Ueno, Yoshio; and Inohara, Masanobu, 4,309,376, Cl. 264-241.000.
Inoue, Akihiko: *See—*
Shoji, Yutaka; Suzuki, Yoshio; Sugiura, Shigekata; and Inoue, Akihiko, 4,309,690, Cl. 338-163.000.
Inoue, Haruo: *See—*
Ueno, Katsuji; Inoue, Haruo; and Furuta, Akihiro, 4,309,513, Cl. 525-68.000.
Inoue, Shigeo: *See—*
Tsutsumi, Hisao; Abe, Yoshiaki; Inoue, Shigeo; and Ishida, Atsuo, 4,309,447, Cl. 424-361.000.
Inouye, Shigeharu: *See—*
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,309,208, Cl. 71-86.000.
Institut de Recherches de la Siderurgie Francaise: *See—*
Bertolotti, Francis; Daverio, Jean-Claude; and Weber, Georges, 4,308,881, Cl. 134-122.00R.
International Business Machines Corporation: *See—*
Blahut, Richard E., 4,309,703, Cl. 343-17.2PC.
Chang, Leo S.; and DeMore, Anthony, 4,309,117, Cl. 600-241.100.
Dinwiddie, John M., Jr., 4,309,754, Cl. 364-200.000.
El-Kareh, Badih, 4,309,716, Cl. 357-50.000.
Gendler, Paul L.; Grant, Barbara D.; and Snyder, Clinton D., 4,309,255, Cl. 204-2.000.
Godard, Dominique N., 4,309,770, Cl. 375-14.000.
International Harvester Company: *See—*
Holm, Charles H.; Schubert, William L.; and Sitorius, Howard E., 4,309,742, Cl. 362-78.000.
Khanna, Jagdish C., 4,308,931, Cl. 180-235.000.
Shore, Daniel B.; and Chatterjea, Probir K., 4,308,893, Cl. 137-625.690.
Valco, Thomas D., 4,308,997, Cl. 241-47.000.
International Telephone and Telegraph Corporation: *See—*
Cooper, William J., 4,308,788, Cl. 92-37.000.
Irick, Stephen C., to United States of America, National Aeronautics and Space Administration. Continuous self-locking spiral wound seal. 4,309,039, Cl. 277-1.000.
Irie, Hirosada: *See—*
Hashimoto, Tatsuya; Inagaki, Michio; Irie, Hirosada; and Tukamoto, Susumu, 4,309,589, Cl. 219-121.0ED.
Irland, Lewis F., to Continental Group, Inc., The. Compartmented aerosol container. 4,308,973, Cl. 220-454.000.
Isaksson, Sven-Erik, to ASEA Aktiebolag. Bushing for electrical leads. 4,309,568, Cl. 174-151.000.
Ishiba, Teruyuki: *See—*
Hirai, Kentaro; Ishiba, Teruyuki; Matsutani, Shigeru; Makino, Itsuo; Fujishita, Toshio; Doteuchi, Masami; and Otani, Koichi, 4,309,433, Cl. 424-266.000.
Ishibashi, Kazuhisa, to Toyo Seikan Kaisha, Ltd. High frequency induction heating circuit. 4,309,586, Cl. 219-10.770.
Ishibe, Nobuyuki; and Metcalf, Thomas G., to Dow Chemical Company, The. Methylchloroform stabilizer composition employing an alkynyl sulfide. 4,309,301, Cl. 252-172.000.
Ishida, Atsuo: *See—*
Tsutsumi, Hisao; Abe, Yoshiaki; Inoue, Shigeo; and Ishida, Atsuo, 4,309,447, Cl. 424-361.000.
Ishida, Yukihito: *See—*
Ishikawa, Akira; Ishida, Yukihito; Ikegami, Shiro; Satoh, Hiroshi; Sato, Ryuichi; Tomisawa, Setuso; and Toyoshima, Shigeru, 4,309,412, Cl. 424-78.000.
Ishihara Sangyo Kaisha, Ltd.: *See—*
Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Someya, Sinzo; and Sakashita, Nobuyuki, 4,309,562, Cl. 71-108.000.
Ishii, Hikonori; and Ide, Kenichi, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Apparatus for changing rolls of vertical rolling mill stand. 4,308,741, Cl. 72-239.000.
Ishii, Keizou: *See—*
Ishikura, Shinichi; Mizuguchi, Ryuzo; Ishii, Keizou; and Yoshioka, Tamotu, 4,309,327, Cl. 260-29.60H.
Ishikawa, Akira; Ishida, Yukihito; Ikegami, Shiro; Satoh, Hiroshi; Sato, Ryuichi; Tomisawa, Setuso; and Toyoshima, Shigeru, to Sato, Ryuichi. Germanium-containing organic polymer and its use in the treatment of liver disorders. 4,309,412, Cl. 424-78.000.
Ishikawa, Tomihisa: *See—*
Uemura, Toshio; Watanabe, Yoshiki; Masumoto, Yoji; Ishikawa, Tomihisa; Kajimoto, Noboru; and Kawada, Shin, 4,308,806, Cl. 110-244.000.
Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*
Ishii, Hikonori; and Ide, Kenichi, 4,308,741, Cl. 72-239.000.
Ishikura, Shinichi; Mizuguchi, Ryuzo; Ishii, Keizou; and Yoshioka, Tamotu, to Nippon Paint Co., Ltd. Polymeric resin from ethylenic amino, sulfonic monomers. 4,309,327, Cl. 260-29.60H.
Ishimatsu, Kenji: *See—*
Tanaka, Eiichi; Nohara, Norimasa; Tomitani, Takehiro; Ishimatsu, Kenji; and Takami, Katsumi, 4,309,611, Cl. 250-363.00S.
Isliker, Gaston R.: *See—*
Mulkins, George F.; Dombrowski, Jerome P.; and Isliker, Gaston R., 4,309,738, Cl. 361-253.000.
Itakura, Kenji: *See—*
Suzuki, Hideo; Itakura, Kenji; and Uchiyama, Yasuji, 4,308,779, Cl. 84-1.190.
Ito, Masaharu, to Canon Kabushiki Kaisha. Photographic lens assembly. 4,309,076, Cl. 350-255.000.
Ito, Takeo: *See—*
Mikogami, Yukihiro; Ito, Takeo; and Wada, Moriyasu, 4,309,512, Cl. 525-58.000.
Ito, Teruhiko; and Takahashi, Haruo, to Tokyo Shibaura Denki Kabushiki Kaisha. Current transforming circuits. 4,309,652, Cl. 323-357.000.

Ito, Toshimasa; and Aiba, Jiro, to TDK Electronics Co., Ltd. Semiconductor amplifier. 4,309,666, Cl. 330-286.000.

Ito, Yoshifumi; Nishimoto, Yoshihiko; Taoda, Kiyomichi; Sato, Fumiaki; Ueda, Takashi; and Uehara, Seibi, to Mitsubishi Jukogyo Kabushiki Kaisha. Process for heat treatment of coal. 4,308,668, Cl. 34-30.000.

Itoh, Norihiko: *See—*
Takizawa, Yoshiyuki; Itoh, Norihiko; Kashiwazaki, Takashi; Takano, Tomomitsu; and Kobayashi, Junji, 4,309,728, Cl. 360-71.000.

ITT Industries, Inc.: *See—*
Liedtke, Karl-Heinz; and Rachner, Horst, 4,309,646, Cl. 318-443.000.

Ivanov, Vladimir A.: *See—*
Zitser, Vitaly A.; Melnikov, Alexandr V.; Bachelis, Leonid V.; Shishkin, Nikolai K.; Morozov, Jury E.; Ivanov, Vladimir A.; Olshansky, Semen A.; Dreishev, Igor I.; Stolyar, Eduard A.; Kushelman, Vladimir S.; Shartner, Eduard G.; Abaskalov, Vladimir D.; and Levinson, Vladimir A., 4,308,909, Cl. 164-207.000.

Iwakura, Sadao, to Canon Kabushiki Kaisha. Thermal printer. 4,309,712, Cl. 346-76.0PH.

Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, to Nissan Motor Company, Limited. Line pressure control device for the hydraulic control system of an automatic power transmission. 4,308,765, Cl. 74-869.000.

Iwashita, Yoshihiro: *See—*
Yamada, Norimasa; Iwashita, Yoshihiro; Okada, Masanori; and Kanome, Yoshihiro, 4,308,829, Cl. 123-188.00M.
Yamada, Norimasa; Iwashita, Yoshihiro; Okada, Masanori; and Kanome, Yoshihiro, 4,308,830, Cl. 123-188.00M.

Iwatani, Katsumi; and Ohashi, Takeo, to Omron Tateisi Electronics Co. Power source device for electronic counting system. 4,309,623, Cl. 307-200.00A.

J. I. Case Company: *See—*
Parquet, Donald J.; and King, Donald R., 4,308,787, Cl. 91-6.000.
Shumaker, John F., 4,309,142, Cl. 414-722.000.

J. M. Huber Corporation: *See—*
Lamond, Trevor G., 4,309,399, Cl. 423-450.000.

J & S Hydraulics, Inc.: *See—*
Lowe, Jerome R.; and Russo, Frank P., 4,308,736, Cl. 72-36.000.

Jablonski, Edward F.: *See—*
Balke, George L.; and Jablonski, Edward F., 4,308,910, Cl. 165-9.300.

Jackola, David J.: *See—*
Nally, Robert B.; and Jackola, David J., 4,309,601, Cl. 235-449.000.

Jackson, Mark F.: *See—*
Brandewie, Joseph E.; Feldman, Steven; and Jackson, Mark F., 4,308,659, Cl. 29-748.000.

Jackson, Ronald A.; and Maruscak, John, to Black & Decker Inc. Work support. 4,308,934, Cl. 182-184.000.

Jacobetz, Paul J.: *See—*
Levine, Melvin; Jacobetz, Paul J.; and Sperry, Elmer A., III, 4,309,262, Cl. 204-195.00R.

Jacobs, Reginald E. Apparatus for controlling submarine oil leakage. 4,309,127, Cl. 405-60.000.

Jacoby, Hans-Dieter: *See—*
Hahn, Herbert; Jacoby, Hans-Dieter; Jung, Richard; and Schuster, Erich, 4,308,666, Cl. 33-166.000.

Jacocks, James L., to Aro, Inc. Adaptive automatic wall wind tunnel. 4,308,748, Cl. 73-147.000.

James B. Lansing Sound, Inc. ("JBL"): *See—*
Keele, D. Broadus, Jr., 4,308,932, Cl. 181-187.000.

James, James R.; James, William; and Drewett, Robert J., to National Research Development Corporation. Radio antennae structures employing helical conductors. 4,309,707, Cl. 343-895.000.

James, Ronald N., to Terrain King Corporation. Hydraulically driven mower. 4,308,713, Cl. 56-11.900.

James, William: *See—*
James, James R.; James, William; and Drewett, Robert J., 4,309,707, Cl. 343-895.000.

Jannard, James H., to Oakley, Inc. Lightened hand grip. 4,308,762, Cl. 74-551.900.

Janome Sewing Machine Co., Ltd.: *See—*
Takenoya, Hideaki, 4,308,814, Cl. 112-158.00E.

Janouschek, Heinz, to Fritz Gegauf Aktiengesellschaft Bernina-Nahmaschinenfabrik. Device for forming a hem on fabric edges with the use of a sewing machine. 4,308,813, Cl. 112-143.000.

Jarman, Davis R.; and Hinson, Virgil H. Floor anchor. 4,309,138, Cl. 411-55.000.

Jaschke, Peter: *See—*
Girodi, Erich; Richter, Gerhard; Neumann, Berthold; Jaschke, Peter; Slabik, Johannes; Weber, Roland; Schmidt, Andrea; Krieg, Peter; Groschel, Lutz; Heynisch, Joachim; Starke, Joachim; Wienold, Dietrich; Scholz, Gunter; and Monch, Eckehard, 4,309,193, Cl. 48-66.000.

Jayaraman, Anantharaman: *See—*
Vidal, Frederick D.; and Jayaraman, Anantharaman, 4,309,451, Cl. 426-331.000.

Jefferson, Donald E.; Coe, Charles G.; Beitchman, Burton D.; and Uffner, Melville W., to Air Products and Chemicals, Inc. Process for promoting the low temperature cure of polyester resins. 4,309,511, Cl. 525-14.000.

Jelliffe, Roger W.; and Crone, Jack D., to University of Southern California. Infusion controlling apparatus and method. 4,308,866, Cl. 128-214.00E.

Jenkins, Donald H.: *See—*
Adamson, James R., Jr.; and Jenkins, Donald H., 4,309,608, Cl. 250-330.000.

Jenks, Richard H., to Revere Copper and Brass Incorporated. Method of making internally slitted strip material. 4,308,656, Cl. 29-527.700.

Jeno's, Inc.: *See—*
Paulucci, Jeno F., 4,308,952, Cl. 206-216.000.

Jenson, Clark E.; and Wolfe, Warren D. Tree medication capsule. 4,308,689, Cl. 47-57.500.

Jhabvala, Murzban D., to United States of America, National Aeronautics and Space Administration. Implantable electrical device. 4,308,868, Cl. 128-421.000.

Jillson, Ronald L.: *See—*
Rouwhorst, Dale L.; and Jillson, Ronald L., 4,309,223, Cl. 106-309.000.

Jiveman, Jan; Bengtsson, Raymond; Kaya, Rasit; and Bengtsson, Rune. Envelope. 4,308,988, Cl. 229-80.000.

Johnson, Axel R.; and Woebcke, Herman N., to Stone & Webster Engineering Corporation. Sequential thermal cracking process. 4,309,272, Cl. 208-72.000.

Johnson, Fred D., to Zenith Radio Corporation. Service switch arrangement for low level matrixing type television receiver. 4,309,718, Cl. 358-10.000.

Johnson, George B.; and Clapp, Gerald A., to United States of America, Navy. Apparatus and method for radio channel selection. 4,309,773, Cl. 455-62.000.

Johnson, John H.: *See—*
Fields, Joseph E.; Asculai, Samuel S.; and Johnson, John H., 4,309,413, Cl. 424-78.000.

Johnson, Keith, Jr.: *See—*
Brown, Christopher K.; Johnson, Keith, Jr.; and Wion, Donald A., 4,308,660, Cl. 29-749.000.

Johnson, Marvin M.; Tabler, Donald C.; and Nowack, Gerhard P., to Phillips Petroleum Company. Ammonia synthesis with catalyst derived by heating on a support a salt selected from alkali metal, alkaline earth metal, iron and cobalt hexacyanocobaltates and hexacyanoruthenates. 4,309,311, Cl. 252-438.000.

Johnson, Michael R., to Pfizer Inc. Oximino-1-hydroxyoctahydrobenzo[c]quinolines and derivatives thereof. 4,309,545, Cl. 546-108.000.

Johnson, Norman A. Self-aligning clamping apparatus. 4,308,937, Cl. 188-43.000.

Johnson, Russell W.: *See—*
O'Hara, Mark J.; and Johnson, Russell W., 4,309,277, Cl. 208-111.000.

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Jones, John P. Modular infrared space heater device. 4,309,594, Cl. 219-365.000.

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McIntosh, Billy R.; and Jones, Lawrence R., 4,309,232, Cl. 156-64.000.

Jones, Linda M. Tampon dispener. 4,308,974, Cl. 221-196.000.

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Jonner, Wolf-Dieter: *See—*
Leiber, Heinz; Braschel, Volker; Jonner, Wolf-Dieter; and Wupper, Hans-Herbert, 4,309,060, Cl. 303-106.000.

Jonsson, Georg S.: *See—*
Bjorkman, Simon J.; Jonsson, Georg S.; and Rundquist, Per S. R., 4,309,606, Cl. 250-252.000.

Jourdan, Louis J. Amphibious industrial landing stages which can be run aground and means for the displacement of heavy loads to the grounds. 4,308,816, Cl. 114-270.000.

Joy Manufacturing Company: *See—*
Leblanc, Louis H., Jr., 4,308,925, Cl. 173-136.000.

Jung, Michel: *See—*
Bey, Philippe; and Jung, Michel, 4,309,442, Cl. 424-319.000.

Jung, Richard: *See—*
Hahn, Herbert; Jacoby, Hans-Dieter; Jung, Richard; and Schuster, Erich, 4,308,666, Cl. 33-166.000.

Kabushiki Kaisha Daini Seikosha: *See—*
Tabata, Junichi, 4,309,627, Cl. 307-362.000.

Kabushiki Kaisha Kankyo Kaihatsu: *See—*
Muta, Natsuo; and Kanamaru, Toshihisa, 4,308,824, Cl. 118-713.000.

Kabushiki Kaisha Kawaguchiya Hayashi Juho Kayaku-Ten: *See—*
Hayashi, Hisao, 4,308,786, Cl. 89-144.000.

Kabushiki Kaisha Kenseido: *See—*
Miyagawa, Takeo, 4,309,455, Cl. 204-17.000.

Kabushiki Kaisha Kishohin Kagaku Kaiho Kenkyusho: *See—*
Toida, Hiroshi; and Koishi, Masumi, 4,309,411, Cl. 424-63.000.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Iida, Akio; and Miyake, Kimio, 4,308,930, Cl. 180-89.200.
Nagai, Shunichi; and Umano, Yasuhiro, 4,309,696, Cl. 340-515.000.
Nishi, Ikuo, 4,308,735, Cl. 72-21.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Onoue, Keiji; Katoh, Takashi; Yoshida, Yoshiaki; and Seiki, Kazuo, 4,308,717, Cl. 57-301.000.

Kageyama, Akira: *See—*
Obara, Mitsuo; Kageyama, Akira; and Uchigasaki, Isao, 4,309,519, Cl. 525-445.000.

Kagitani, Yoshio: *See*—
Ueda, Yasuo; Kagitani, Yoshio; Sako, Eiji; Suyama, Tadakazu; Komatsu, Nobuhiko; and Satoh, Daisuke, 4,309,437, Cl. 424-274.000.

Kahn, William M.: *See*—
Reach, Roy W.; Kahn, William M.; and Shapiro, David, 4,309,761, Cl. 364-900.000.

Kai, Osamu: *See*—
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Kaine, Albert A., Jr.; and Mabry, David L. Bowstring draw and trigger release apparatus. 4,308,851, Cl. 124-35.00A.

Kaiser, Hildulf: *See*—
Reiner, Roland; and Kaiser, Hildulf, 4,309,453, Cl. 427-54.100.

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Uemura, Toshio; Watanabe, Yoshiki; Masumoto, Yoji; Ishikawa, Tomihisa; Kajimoto, Noboru; and Kawada, Shin, 4,308,806, Cl. 110-244.000.

Kalmar, Irene. Plaster cast. 4,308,862, Cl. 128-91.00R.

Kalthoff, Robert J.; and Neumeier, Paul J. Document retrieval system and components thereof. 4,308,960, Cl. 209-612.000.

Kamaishi, Tadami: *See*—
Kitagawa, Takao; Abiko, Shigeo; and Kamaishi, Tadami, 4,308,799, Cl. 101-457.000.

Kamoshita, Katsuzo: *See*—
Takemoto, Ichiki; Sumida, Seizo; Yoshida, Ryo; and Kamoshita, Katsuzo, 4,309,212, Cl. 71-120.000.

Kamoto, Satoru, to Mitsubishi Denki Kabushiki Kaisha. Device for measuring quantity of electric charges on electrified fluid. 4,309,661, Cl. 324-453.000.

Kamuro, Setsufumi, to Sharp Kabushiki Kaisha. MOS Transistor decoder circuit. 4,309,629, Cl. 307-449.000.

Kanamaru, Toshihisa: *See*—
Muta, Natsuo; and Kanamaru, Toshihisa, 4,308,824, Cl. 118-713.000.

Kane, James W.; and La Conte, Richard J., to Boeing Company, The. Method and solution for the room temperature dyeing of nylon. 4,309,177, Cl. 8-516.000.

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Aoki, Kiyoshi; and Ohara, Saburo, 4,309,560, Cl. 560-14.000.
Naruse, Tsutomu; Osagawa, Takao; Naito, Hiroshi; Matsui, Masao; and Okamoto, Kazuo, 4,309,479, Cl. 428-397.000.

Kanebo Synthetic Fibers Ltd.: *See*—
Aoki, Kiyoshi; and Ohara, Saburo, 4,309,560, Cl. 560-14.000.

Kannegiesser, Reinhard; Guthle, Rainer; and Finsterwalder, Kurt, to L. Schuler GmbH. Apparatus for producing a bead on the periphery of a hollow cylinder. 4,308,737, Cl. 72-91.000.

Kanno, Yoshinori: *See*—
Ohmae, Tadayuki; and Kanno, Yoshinori, 4,309,484, Cl. 428-441.000.

Kanome, Yoshihiro: *See*—
Yamada, Norimasa; Iwashita, Yoshihiro; Okada, Masanori; and Kanome, Yoshihiro, 4,308,829, Cl. 123-188.00M.
Yamada, Norimasa; Iwashita, Yoshihiro; Okada, Masanori; and Kanome, Yoshihiro, 4,308,830, Cl. 123-188.00M.

Kanoto, Masanobu; and Ueda, Shigeru, to Canon Kabushiki Kaisha. Heating and fixing device for toner image. 4,309,591, Cl. 219-216.000.

Kansai Paint Co., Ltd.: *See*—
Aihara, Tetsuo; Nakayama, Yasuharu; and Yamashita, Yoshio, 4,309,321, Cl. 260-23.0CP.

Kao Soap Co., Ltd.: *See*—
Takaishi, Naotake; Urata, Kouichi; Inamoto, Yoshiaki; Okamoto, Kikuhiko; and Tsuchiya, Shuichi, 4,309,448, Cl. 424-365.000.
Tsutsumi, Hisao; Abe, Yoshiaki; Inoue, Shigeo; and Ishida, Atsuo, 4,309,447, Cl. 424-361.000.

Karasawa, Shuichi: *See*—
Matsumoto, Fuyuhiko; and Karasawa, Shuichi, 4,308,821, Cl. 118-645.000.

Karasev, Vadim A.: *See*—
Chukhanov, Zinovy F.; Chukhanov, Zinovy Z.; Tsuprov, Sergei A.; Samsonov, Vladimir I.; and Karasev, Vadim A., 4,309,197, Cl. 48-197.00R.

Karmazin Products Corporation: *See*—
Woodhull, Ivan D., Jr., 4,308,652, Cl. 29-157.400.

Karrer, Friedrich, to Ciba-Geigy Corporation. Piperidino pyrrolidinones. 4,309,546, Cl. 546-187.000.

Kasamatsu, Kiyoshi: *See*—
Ohno, Nobuo; Ohno, Isao; Nishioka, Toshio; Takeda, Hisami; and Kasamatsu, Kiyoshi, 4,309,439, Cl. 424-282.000.

Kashiwagi, Toshihiro: *See*—
Doi, Keiichiro; and Kashiwagi, Toshihiro, 4,309,585, Cl. 219-10.55B.

Kashiwazaki, Takashi: *See*—
Takizawa, Yoshiyuki; Itoh, Norihiko; Kashiwazaki, Takashi; Takano, Tomomitsu; and Kobayashi, Junji, 4,309,728, Cl. 360-71.000.

Kastner, Ralph E.; and Hamill, Robert L., to Eli Lilly and Company. Process for preparing narasin. 4,309,504, Cl. 435-118.000.

Kato, Suehiro: *See*—
Nakamura, Takeshi; Kato, Suehiro; and Nishiyama, Hiroshi, 4,309,266, Cl. 204-298.000.

Kato, Toshikazu: *See*—
Saitou, Sinichi; Kato, Toshikazu; Watanabe, Seizo; Nishiyama, Toyoo; Shimoda, Misao; Shibata, Tutomu; Kimura, Kenji; and Satoh, Ken, 4,309,002, Cl. 242-198.000.

Katoh, Takashi: *See*—
Onoue, Keiji; Katoh, Takashi; Yoshida, Yoshiaki; and Seiki, Kazuo, 4,308,717, Cl. 57-301.000.

Katritzky, Alan R.: *See*—
Schultz, William J.; and Katritzky, Alan R., 4,309,516, Cl. 525-334.000.

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Steinke, John J.; and Kaufman, George, 4,308,956, Cl. 206-611.000.

Kawada, Shin: *See*—
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Kawamoto, Mutsumi; and Miki, Nobuaki, to Aisin Warner, K.K. Shift control device for automatic transmission. 4,308,764, Cl. 74-752.00A.

Kawanabe, Hitoshi: *See*—
Yoshikawa, Toshihumi; Tani, Zempei; Aso, Akira; and Kawanabe, Hitoshi, 4,309,604, Cl. 250-226.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Kajikawa, Takashi; Makimura, Minoru; Kunise, Satoru; and Furuitsu, Satoshi, 4,309,227, Cl. 148-16.600.

Kawasaki Steel Corporation: *See*—
Nakano, Shosaburo; Hiro, Toshiharu; Nishiyama, Noboru; Agusa, Kazuo; and Kosho, Masaaki, 4,309,587, Cl. 219-73.110.

Kawase, Hideyuki: *See*—
Yoshida, Masashi; Kawase, Hideyuki; and Shinoda, Tadashi, 4,309,731, Cl. 360-85.000.

Kawasumi, Yoshio; and Takahashi, Mitsuo, to Nihon Kogyo Kabushiki Kaisha. Process of producing multilayer-coated composite powder. 4,309,457, Cl. 427-214.000.

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Kawatani, Kimio: *See*—
Okumichi, Toshiharu; and Kawatani, Kimio, 4,309,338, Cl. 260-101.000.

Kaya, Rasit: *See*—
Jiveman, Jan; Bengtsson, Raymond; Kaya, Rasit; and Bengtsson, Rune, 4,308,988, Cl. 229-80.000.

Keele, D. Broadus, Jr., to James B. Lansing Sound, Inc. ("JBL"). Loudspeaker horn. 4,308,932, Cl. 181-187.000.

Keeley, Donald E., to Dynapol. Process for preparing cyclic amides. 4,309,543, Cl. 546-76.000.

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Lassen, Niels; Bogeso, Klaus P.; Hansen, Peter B.; Buus, Jorn L. M.; and Bigler, Allan J., 4,309,429, Cl. 424-248.400.

Keiper Automobiltechnik GmbH & Co. KG: *See*—
Muhr, Dieter, 4,309,015, Cl. 248-396.000.

Keller, Nicholas W., to Action Industries, Inc. Magazine rack. 4,308,964, Cl. 211-126.000.

Kelly, Dan H., to Board of Regents, University of Texas. Pharyngeal-esophaegeal segment pressure prosthesis. 4,308,861, Cl. 128-68.000.

Kempe, Wolfgang, to Li·entia Patent-Verwaltungs G.m.b.H. Measuring sensor. 4,309,688, Cl. 338-25.000.

Kendall Company, The: *See*—
Arkans, Edward J., 4,308,870, Cl. 128-640.000.

Kennecott Corporation: *See*—
Tworek, John L.; and Rignel, Gordon R., 4,309,203, Cl. 65-4.100.
Tworek, John L.; and Rignel, Gordon R., 4,309,244, Cl. 162-102.000.
Tworek, John L.; and Rignel, Gordon R., 4,309,245, Cl. 162-102.000.
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Heitkamp, Dieter, 4,309,290, Cl. 210-695.000.
Ibach, Harald, 4,309,607, Cl. 250-305.000.
Klatt, Karl-Heinz; and Kuussel, Eckard, 4,309,143, Cl. 415-90.000.

Kertesz, Ferencz: *See*—
Sack, Wieland; Anthonsen, Reiner; and Kertesz, Ferencz, 4,309,486, Cl. 428-511.000.

Keske, Robert G.; and Stephens, James R., to Standard Oil Company (Indiana). Injection moldable amide-imide copolymers. 4,309,528, Cl. 528-188.000.

Kessler, Bezalel, to State of Israel Ministry of Agriculture, The. Enhancement of reproductive plant development by means of choline salts. 4,309,205, Cl. 71-27.000.

Keystone Consolidated Industries, Inc.: *See*—
Gutshall, Charles E., 4,309,135, Cl. 411-17.000.

Khanna, Jagdish C., to International Harvester Company. Guard for drive shaft in an articulated tractor. 4,308,931, Cl. 180-235.000.

Kice, Warren B. Magnetic tape cassette reproducing and/or recording system. 4,309,729, Cl. 360-72.100.

Kiefer, John E., to Eastman Kodak Company. Hydrophilic film for detection of heavy metals. 4,309,186, Cl. 23-230.00R.

Kihara, Keiichi: *See*—
Kubo, Masashige; Nonaka, Yuji; and Kihara, Keiichi, 4,309,341, Cl. 260-112.50R.

Kikuta, Kazutsune: *See*—
Sato, Akihiro; Kikuta, Kazutsune; Matsuda, Kenji; Uwai, Toshihiro; and Hanari, Tohru, 4,309,521, Cl. 526-114.000.

Kilian, Wolfgang: *See—*
Dietrich, Johannes; Dittmann, Walter; Frese, Albert; and Kilian, Wolfgang, 4,309,522, Cl. 526-158.000.

Kimberly-Clark Corporation: *See—*
Mattina, Charles F., 4,308,877, Cl. 131-297.000.

Kimura, Kenji: *See—*
Saitou, Sinichi; Kato, Toshikazu; Watanabe, Seizo; Nishiyama, Toyoo; Shimoda, Misao; Shibata, Tutomu; Kimura, Kenji; and Satoh, Ken, 4,309,002, Cl. 242-198.000.

King, Donald R.: *See—*
Parquet, Donald J.; and King, Donald R., 4,308,787, Cl. 91-6.000.

Kingsley, Charles A., to General Motors Corporation. Emission control system with integrated evaporative canister purge. 4,308,841, Cl. 123-520.000.

Kino, Yoshihiro: *See—*
Furuya, Nobuaki; Kino, Yoshihiro; and Miyama, Hiroshi, 4,309,679, Cl. 333-195.000.

Kinsel, David L. Add-on heavy-duty valve-closing device for high-performance racing engines. 4,308,828, Cl. 123-90.390.

Kircher, William B.: *See—*
Jones, Darrell B.; and Kircher, William B., 4,309,593, Cl. 219-347.000.

Kirin Beer Kabushiki Kaisha: *See—*
Abe, Ichiro; Suzuki, Takashi; and Ebara, Toshio, 4,308,818, Cl. 118-211.000.

Kishu Neji Co., Ltd.: *See—*
Nakae, Isoji, 4,309,139, Cl. 411-187.000.

Kitagawa, Masahiro, to Olympus Optical Co., Ltd. Automatic exposure control circuit for camera. 4,309,092, Cl. 354-33.000.

Kitagawa, Takao; Abiko, Shigeo; and Kamaishi, Tadami, to Toray Industries, Inc. Dry planographic printing plate. 4,308,799, Cl. 101-457.000.

Kitajima, Masao: *See—*
Shinozaki, Fumiaki; Namiki, Tomizo; Kitajima, Masao; Ikeda, Tomoaki; and Mizobuchi, Yuzo, 4,309,713, Cl. 346-135.100.

Kitano, Kyozo: *See—*
Sekiguchi, Shizuo; Tano, Tetsuo; and Kitano, Kyozo, 4,309,317, Cl. 252-555.000.

Kitko, David J., to Procter & Gamble Company, The. Article for sanitizing toilets. 4,308,625, Cl. 4-228.000.

Kitsukawa, Kazumi: *See—*
Akutsu, Mitsuo; Nakahara, Yutaka; and Kitsukawa, Kazumi, 4,309,335, Cl. 260-45.7PH.

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Mibu, Katsutoshi; and Kitsunezaki, Hikaru, 4,309,702, Cl. 340-870.180.

Klatt, Karl-Heinz; and Kuussel, Eckard, to Kernforschungsanlage Julich GmbH. Vane-disk type turbomolecular pump and etching method of manufacture of vane disks. 4,309,143, Cl. 415-90.000.

Klawatter, Jerome J., to Hemex, Inc. Heart valve prosthesis. 4,308,624, Cl. 3-1.500.

Kleber, Rolf, to Hoechst Aktiengesellschaft. Sizing composition. 4,309,510, Cl. 525-6.000.

Klein, Imrich; and Klein, Reuben. Method and apparatus for improved solids conveying in plasticating extruders. 4,309,115, Cl. 366-79.000.

Klein, Imrich: *See—*
Klein, Reuben; and Klein, Imrich, 4,309,114, Cl. 366-79.000.

Klein, Max S., to Klein Plastic Products, Inc. Planter. 4,308,690, Cl. 47-79.000.

Klein, Norman E., to Milliken Research Corporation. Knot passing coating apparatus. 4,308,823, Cl. 118-670.000.

Klein Plastic Products, Inc.: *See—*
Klein, Max S., 4,308,690, Cl. 47-79.000.

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Klein, Reuben: *See—*
Klein, Imrich; and Klein, Reuben, 4,309,115, Cl. 366-79.000.

Klockner-Humboldt-Deutz AG: *See—*
Nissen, Reinhard; and Graf, Rupprecht, 4,309,215, Cl. 75-109.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Hafner, Karl E.; and Kohler, Wolfgang, 4,308,839, Cl. 123-496.000.

Kloker, Kevin L.; and Pautler, James A., to Motorola, Inc. Soft quantizer for FM radio binary digital signaling. 4,309,772, Cl. 375-76.000.

Klop, Marius A. F.; Meerman, Wilhelmus C. P. M.; Peelen, Jan G. J.; and Tuin, Hermanus N., to U.S. Philips Corporation. Method of and apparatus for manufacturing optical fibres. 4,309,201, Cl. 65-2.000.

Klusmier, Kenneth L., to Morgan Construction Company. Apparatus for separating unacceptable elongated elements. 4,308,958, Cl. 209-518.000.

Knecht, Bernath L. Heat transfer system. 4,308,912, Cl. 165-32.000.

Knodow, Ryotaro: *See—*
Andow, Fumio; Knodow, Ryotaro; and Okamoto, Eiichi, 4,309,767, Cl. 371-24.000.

Knowles, James. Metal connector struts for truss-type beams. 4,308,703, Cl. 52-694.000.

Kobayashi, Junji: *See—*
Takizawa, Yoshiyuki; Itoh, Norihiko; Kashiwazaki, Takashi; Takano, Tomomitsu; and Kobayashi, Junji, 4,309,728, Cl. 360-71.000.

Kobzina, John W., to Chevron Research. Herbicidal method and composition. 4,309,209, Cl. 71-91.000.

Koch, Manfred; and Nestler, Hans J., to Hoechst Aktiengesellschaft. Process for the preparation of phenoxypropionic acids and their alkali metal salts. 4,309,547, Cl. 546-301.000.

Kochendorfer, Heinrich: *See—*
Grabow, Kurt; Mahl, Willy; Muller, Karl-Heinz; Kochendorfer, Heinrich; Bertsch, Dieter; Mayer, Siegfried; Anhenn, Jorg; and Dworak, Wilhelm, 4,309,158, Cl. 418-132.000.

Kocks Technik GmbH & Co.: *See—*
Brauer, Hans, 4,308,740, Cl. 72-234.000.

Koga, Isao; Terui, Yohji; and Ohgushi, Masuhito, to Chisso Corporation. Method for producing substituted dichlorosilane. 4,309,558, Cl. 556-479.000.

Kohara, Rikusei; Komoto, Yoshihisa; and Nakajima, Seizo, to Matsushita Electric Industrial Co., Ltd. Electrochromic display apparatus. 4,309,082, Cl. 350-357.000.

Kohler, Wolfgang: *See—*
Hafner, Karl E.; and Kohler, Wolfgang, 4,308,839, Cl. 123-496.000.

Koishi, Masumi: *See—*
Toida, Hiroshi; and Koishi, Masumi, 4,309,411, Cl. 424-63.000.

Kokusai Denshin Denwa Co., Ltd.: *See—*
Mori, Hiromichi; Maruyama, Tatsuo; Matsumoto, Jun; and Ikeda, Yoshikazu, 4,309,572, Cl. 179-27.0FE.

Koll, Jochen; Paulat, Volker; Hornle, Reinhold; Molls, Hans-Heinz; and Nonn, Konrad, to Bayer Aktiengesellschaft. Liquid crystal phase of an azo reactive dyestuff and its use for dyeing and printing natural and synthetic substrates. 4,309,182, Cl. 8-527.000.

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Komatsu, Nobuhiko: *See—*
Ueda, Yasuo; Kagitani, Yoshio; Sako, Eiji; Suyama, Tadakazu; Komatsu, Nobuhiko; and Satoh, Daisuke, 4,309,437, Cl. 424-274.000.

Komoto, Yoshihisa: *See—*
Kohara, Rikusei; Komoto, Yoshihisa; and Nakajima, Seizo, 4,309,082, Cl. 350-357.000.

Kondo, Kazuo; and Takami, Akio, to NGK Spark Plug Co., Ltd. Enameled steel plate. 4,309,485, Cl. 428-457.000.

Kondo, Shiro; and Takii, Yasuo, to Alps Electric Co., Ltd. Ganged push-button switch. 4,309,579, Cl. 200-5.00E.

Konishiroku Photo Industry Co., Ltd.: *See—*
Nakamura, Hiroya; and Taguchi, Hiromi, 4,309,101, Cl. 355-14.00R.
Uchida, Yasuo; Yagi, Michio; and Shiozawa, Kazuo, 4,309,088, Cl. 354-21.000.

Konnai, Makoto: *See—*
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,309,208, Cl. 71-86.000.

Konno, Akihiko: *See—*
Tokuda, Hiroastu; Konno, Akihiko; and Suda, Seiji, 4,309,759, Cl. 364-431.050.

Konomi, Toshiaki: *See—*
Nohira, Hidetaka; Konomi, Toshiaki; and Matsui, Hideaki, 4,308,837, Cl. 123-442.000.

Konz, Marvin J.; and Krog, Norman E., to FMC Corporation. Plant regulator. 4,309,566, Cl. 560-110.000.

Kornbaum, Simon, to Ato Chimie. Process for manufacturing thermoplastic compositions and containers made of such compositions. 4,309,465, Cl. 428-35.000.

Koroly, James S.; and Sexton, Robert M., to Westinghouse Electric Corp. Stator winding peripheral connector rings. 4,309,634, Cl. 310-201.000.

Kosho, Masaaki: *See—*
Nakano, Shosaburo; Hiro, Toshiharu; Nishiyama, Noboru; Agusa, Kazuo; and Kosho, Masaaki, 4,309,587, Cl. 219-73.110.

Koster, Arvo: *See—*
Boden, Knut F. I.; Henningsen, Christian J.; and Koster, Arvo, 4,309,642, Cl. 318-113.000.

Koster, Walter E.; Ludke, William E.; and Lastrina, Frank A., to General Electric Company. Foreign particle separator. 4,309,147, Cl. 416-95.000.

Kouts, Herbert: *See—*
Steinberg, Meyer; Powell, James R.; Takahashi, Hiroshi; Grand, Pierre; and Kouts, Herbert, 4,309,249, Cl. 376-192.000.

Kovach, Louis; and Holcombe, Cressie E., to United States of America, Energy. Composition for use in high-temperature hydrogen-fluorine environments and method for making the composition. 4,309,467, Cl. 428-36.000.

Kowa Company Limited: *See—*
Inagi, Toshio; Muramatsu, Toyojiro; and Nagai, Hidetaka, 4,309,414, Cl. 424-81.000.

Kowalski, Gunter, to U.S. Philips Corporation. Device for determining the radiation absorption distribution in a three-dimensional examination zone. 4,309,615, Cl. 250-445.00T.

Kowalski, Victor A.: *See—*
Bohler, Gerard M.; Reed, Edward D.; and Kowalski, Victor A., 4,308,774, Cl. 83-100.000.

Kraemer, Alan D., to Technology Marketing, Inc. Cathode ray tube controller. 4,309,700, Cl. 340-726.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Krauss, Peter; Muller, Ewald; Porner, Horst; and Weber, Robert, 4,309,583, Cl. 219-7.500.

Kraicar, Heinz; and Ziegler, Alfred, to Siemens Aktiengesellschaft. Circuit for closing the remote feed loop of a series-supplied repeater. 4,309,577, Cl. 179-170.00J.

Kramer, Wolfgang; Buchel, Karl H.; Timmler, Helmut; Brandes, Wilhelm; and Frohberger, Paul-Ernst, to Bayer Aktiengesellschaft.

Combating fungi with 1-(2-chlorophenyl)-1-(2-chlorobenzyloximino)-2-(1,2,4-triazol-1-yl)-ethane. 4,309,434, Cl. 424-269.000.

Kratzer, Hans: *See—*
Schmidt, Thomas; Wittig, Andreas; Sehnem, Hans-Peter; Kratzer, Hans; and Singer, Rolf-Jurgen, 4,309,538, Cl. 544-182.000.

Krauss, Peter; Muller, Ewald; Porner, Horst; and Weber, Robert, to Kraftwerk Union Aktiengesellschaft. Heat-treating apparatus for prolonging the life of a pressure vessel, especially a reactor pressure vessel. 4,309,583, Cl. 219-7.500.

Krautz, Fred G.: *See—*
Sage, Donald B.; and Krautz, Fred G., 4,309,326, Cl. 260-29.6NR.

Krebs, Gerd; Friedrich, Rainer; and Saul, Hans-Peter, to Fried. Krupp Gesellschaft Mit Beschrankter Haftung. Apparatus for the injection molding of radial endless tire-tread rings. 4,309,161, Cl. 425-115.000.

Krebser, Rudolf: *See—*
Egger, Caspar; and Krebser, Rudolf, 4,309,164, Cl. 425-589.000.

Krieg, Peter: *See—*
Girodi, Erich; Richter, Gerhard; Neumann, Berthold; Jaschke, Peter; Slabik, Johannes; Weber, Roland; Schmidt, Andrea; Krieg, Peter; Groschel, Lutz; Heynisch, Joachim; Starke, Joachim; Wienold, Dietrich; Scholz, Gunter; and Monch, Eckehard, 4,309,193, Cl. 48-66.000.

Krog, Norman E.: *See—*
Konz, Marvin J.; and Krog, Norman E., 4,309,566, Cl. 560-110.000.

Kroll, Walter. Oil stove for burning waste oil and normal heating oil. 4,308,854, Cl. 126-93.000.

Kronfeld, Leonard E.; and Madsen, Ricky J., to Nortronics Company, Inc. Transducer supporting assembly for double sided floppy disk. 4,309,732, Cl. 360-104.000.

Kubo, Isao; Nagayoshi, Shigemi; Sakata, Futao; Wada, Tetsuo; and Oi, Shoichi, to Mitsui Mining Co. Ltd.; and Mitsui Coke Co. Ltd. Treatment of water-containing coal. 4,309,192, Cl. 44-51.000.

Kubo, Masashige; Nonaka, Yuji; and Kihara, Keiichi, to Sagami Chemical Research Center; Ajinomoto Co., Inc.; and Toyo Soda Mfg. Co. Ltd. Method for purifying α- L-aspartyl-L-phenylalanine lower alkyl ester. 4,309,341, Cl. 260-112.50R.

Kucera, Robert D., to Artway Manufacturing Co., Inc. Shower curtain hanger. 4,308,637, Cl. 16-93.00D.

Kuceski, Vincent P.; and Black, Lenoir, to C. P. Hall Company, The. Rubber additives. 4,309,302, Cl. 252-182.000.

Kucharzyk, Werner: *See—*
Beck, Kurt-Gunther; Habermehl, Diethard; Kucharzyk, Werner; and Siebert, Werner, 4,309,253, Cl. 201-30.000.

Kuckels, Gerhard: *See—*
Schroder, Norbert, 4,308,775, Cl. 83-289.000.

Kudo, Osamu, to Fujitsu Limited. Diffused resistor. 4,309,626, Cl. 307-303.000.

Kuhl, Thomas; and Sauer, Hans, to Varta Batterie Aktiengesellschaft. Closure for galvanic elements. 4,309,493, Cl. 429-172.000.

Kuimov, Vitaly G.: *See—*
Lisitsa, Evgeny I.; Gursky, Alexandr M.; Kuimov, Vitaly G.; Makazan, Jury S.; Paulsky, Alexandr V.; Reznichenko, Fedor A.; Romanov, Alexandr V.; and Uzorovsky, Efim L., 4,308,745, Cl. 72-453.180.

Kullmann, Dieter: *See—*
Muller, Otto; Kullmann, Dieter; and Weghaupt, Erich, 4,309,632, Cl. 310-52.000.

Kumagai, Kiyoshi: *See—*
Momose, Kenichiro; Kumagai, Kiyoshi; and Mori, Fumio, 4,309,489, Cl. 428-619.000.

Kunberger, Walter R. A.; and Ball, Wyatt. Ice tool for mountaineering. 4,308,628, Cl. 7-145.000.

Kunce, Thomas M. Article supporting structure. 4,308,961, Cl. 211-94.500.

Kunise, Satoru: *See—*
Kajikawa. Takashi; Makimura, Minoru; Kunise, Satoru; and Furuitsu, Satoshi, 4,309,227, Cl. 148-16.600.

Kunitake, Yoshikuni: *See—*
Narita, Hitoshi; Kunitake, Yoshikuni; and Yagi, Hikaru, 4,309,172, Cl. 440-67.000.

Kupfer, Joe: *See—*
Plumettaz, Gerard; and Kupfer, Joe, 4,309,023, Cl. 254-273.000.

Kurz, Rainer; and Walther, Ruedi, to Datwyler AG. Method and apparatus for introducing a cable into a vulcanization chamber. 4,309,167, Cl. 432-22.000.

Kushelman, Vladimir S.: *See—*
Zitser, Vitaly A.; Melnikov, Alexandr V.; Bachelis, Leonid V.; Shishkin, Nikolai K.; Morozov, Jury E.; Ivanov, Vladimir A.; Olshansky, Semen A.; Dreishev, Igor I.; Stolyar, Eduard A.; Kushelman, Vladimir S.; Shartner, Eduard G.; Abaskalov, Vladimir D.; and Levinson, Vladimir A., 4,308,909, Cl. 164-207.000.

Kusters, Eduard: *See—*
Appenzeller, Valentin; and Ahrweiler, Karl-Heinz, 4,308,651, Cl. 29-116.0AD.

Kuussel, Eckard: *See—*
Klatt, Karl-Heinz; and Kuussel, Eckard, 4,309,143, Cl. 415-90.000.

Kuwayama, Tetsuro; Suzuki, Takashi; and Matsumoto, Kazuya, to Canon Kabushiki Kaisha. Camera having a diffusing plate with rotationally asymmetric light diffusion property. 4,309,093, Cl. 354-59.000.

Kyritsos, Joseph; and Sacco, Jean, to Rhone-Poulenc-Textile. Flexible/rigid copolyamide. 4,309,531, Cl. 528-339.000.

Kyytsonen, Juhani: *See—*
Vikio, Pentti; Lankinen, Matti; and Kyytsonen, Juhani, 4,309,283, Cl. 209-211.000.

L. Schuler GmbH: *See—*
Kannegiesser, Reinhard; Guthle, Rainer; and Finsterwalder, Kurt, 4,308,737, Cl. 72-91.000.

La Detection Electronique Francaise Protecbat: *See—*
Lecuyer, Daniel; and Pietersen, Anthonius H., 4,309,698, Cl. 340-590.000.

Labvia, S.G.E.: *See—*
Marandet, Andre J. P., 4,309,633, Cl. 310-105.000.

La Conte, Richard J.: *See—*
Kane, James W.; and La Conte, Richard J., 4,309,177, Cl. 8-516.000.

Lacroix, Roger; Adam, Jean-Marie; and Vincze, Janos, to Ciba-Geigy Corporation. Anthraquinone compounds and the production and use thereof. 4,309,180, Cl. 8-609.000.

La Ginestra, Nicholas M. Randomly activated outlet. 4,308,724, Cl. 62-126.000.

Lai, John T.; and Whitehead, Valerie B., to B. F. Goodrich Company, The. Polymeric compositions containing antioxidants. 4,309,336, Cl. 260-45.80N.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*
Foulard, Jean; Bentz, Gerard; and Galey, Jean, 4,309,214, Cl. 75-0.50B.

Lakshmanan, Pallavoor R.: *See—*
Huemmer, Thomas F.; and Lakshmanan, Pallavoor R., 4,309,524, Cl. 526-284.000.
Huemmer, Thomas F.; and Lakshmanan, Pallavoor R., 4,309,561, Cl. 560-26.000.

Lamb, Dana B.: *See—*
Harrison, Nelson K.; and Lamb, Dana B., 4,308,742, Cl. 72-253.100.

Lamond, Trevor G., to J. M. Huber Corporation. Upgrading of thermal black reject material. 4,309,399, Cl. 423-450.000.

Lampelzammer, Helga: *See—*
Huber, Peter; August, Peter; Lampelzammer, Helga; and Primas, Willi, 4,309,478, Cl. 428-391.000.

Lang, Roy: *See—*
Ueno, Masayasu; Yonezu, Hiroo; and Lang, Roy, 4,309,668, Cl. 331-94.50H.

Lange, Burkhart; Agarwal, Suresh C.; Fringeli, Werner; and Gunter, Franz, to Ciba-Geigy Corporation. Process for the production of washing powders of stabilized or enhanced appearance which contain fluorescent whitening agents. 4,309,316, Cl. 252-543.000.

Lange, Wolfgang; and Gerlach, Klaus, to Enka AG. Production of molded polymer body with metal inclusions. 4,309,463, Cl. 427-343.000.

Lankinen, Matti: *See—*
Vikio, Pentti; Lankinen, Matti; and Kyytsonen, Juhani, 4,309,283, Cl. 209-211.000.

Lanty, Henry A., to Bell Telephone Laboratories, Incorporated. Computer input/output arrangement for enabling a simultaneous read/write data transfer. 4,309,755, Cl. 364-200.000.

Laquerbe, Michel; and Tatard, Francois, to Societe Metallurgique de Bretagne. Clay-cement mortars and to the product made with said mortars. 4,309,325, Cl. 260-29.40R.

Larcombe, Michael H.: *See—*
Halsall, James R.; Larcombe, Michael H.; Robertson, James R.; and Rogers, Mark A., 4,309,758, Cl. 364-424.000.

Lassen, Niels; Bogeso, Klaus P.; Hansen, Peter B.; Buus, Jorn L. M.; and Bigler, Allan J., to Kefalas A/S. Xanthene and thioxanthene derivatives, compositions thereof, and treatment therewith. 4,309,429, Cl. 424-248.400.

Lastrina, Frank A.: *See—*
Koster, Walter E.; Ludke, William E.; and Lastrina, Frank A., 4,309,147, Cl. 416-95.000.

Lauderdale, Vivian R., to Beckman Instruments, Inc. Enzymatic assay for glycerol and triglycerides and a reagent for use therein. 4,309,502, Cl. 435-15.000.

Lautenschlager, Hans-Heiner; Betzing, Hans; Winkelmann, Johannes; and Probst, Manfred, to A. Nattermann & Cie. GmbH. Alkenyl-substituted thienylalkanecarboxylic acids and derivatives thereof. 4,309,407, Cl. 424-275.000.

Law, William J. H., to AAL Enterprises, Inc. Troop carrier. 4,309,055, Cl. 296-63.000.

Lawson, Peter, to Rockwell do Brasil Ind. e Com. Ltda. Panel scoring table saw. 4,308,777, Cl. 83-477.200.

Lawter, Raymond L.: *See—*
Wills, David C.; Lawter, Raymond L.; Briggs, Barry D.; and Sampson, Edward F., 4,308,795, Cl. 101-93.370.

Leanza, William J.: *See—*
Christensen, Burton G.; Leanza, William J.; and Wildonger, Kenneth J., 4,309,438, Cl. 424-274.000.

Lebduska, Robert L., to United States of America, Navy. Method and apparatus for testing performance of fiber optic cable components and assemblies. 4,309,105, Cl. 356-73.100.

Leber, Edmond, to Sevylor. Oarlock for inflatable boat. 4,309,173, Cl. 440-109.000.

Leblanc, Louis H., Jr., to Joy Manufacturing Company. Pneumatic impact motor. 4,308,925, Cl. 173-136.000.

Le Boeuf, Guy, to Le Boeuf, Guy. Electric heating device for heating sterilized fluids, such as blood. 4,309,592, Cl. 219-299.000.

Lechner, Robert; and Monat, Hermann, to Siemens Aktiengesellschaft. Arrangement for subscriber circuits utilizing digital time division multiplex telecommunication installations and particularly for PCM local exchanges. 4,309,766, Cl. 370-110.000.

Lecuyer, Daniel; and Pietersen, Anthonius H., to La Detection Electronique Francaise Protecbat. Acoustic fire detection circuit responsive to microcapsule ruptures. 4,309,698, Cl. 340-590.000.

Ledex, Inc.: *See*—
Coors, George T., 4,309,582, Cl. 200-153.00T.
Ledouble, Jean-Pierre; and Muller, Klaus, to Ciba-Geigy Corporation. Process for the production of bis-[O-(1-alkylthioethylimino)-N-methylcarbamyl]N,N'-sulfides. 4,309,360, Cl. 260-453.100.
Lee, Donald R. Trap anchoring stake. 4,308,683, Cl. 43-96.000.
Lee, Gim F., Jr., to General Electric Company. Molding compositions comprising polyphenylene ether and hydrogenated radial block copolymer of vinyl aromatic compound and diene rubber. 4,309,514, Cl. 525-92.000.
Lee, Richard H., to AG-Bag Corporation. Agricultural bag loading apparatus braking mechanism. 4,308,901, Cl. 141-114.000.
Leff, Abram. Portable, buried object detection system with improved signal processing and presentation. 4,309,658, Cl. 324-327.000.
Legatti, Raymond H.: *See*—
Draper, Charles W.; and Legatti, Raymond H., 4,309,681, Cl. 335-18.000.
Legg, Roger C.: *See*—
Robinson, James E.; Pant, Aniket; and Legg, Roger C., 4,308,756, Cl. 73-863.850.
Legris, Andre, to Societe Anonyme dite: Legris. Pipe fittings, and in particular for high pressure fluid pipes. 4,309,050, Cl. 285-341.000.
Leiber, Heinz; Braschel, Volker; Jonner, Wolf-Dieter; and Wupper, Hans-Herbert, to Robert Bosch GmbH. Anti-locking wheel control system. 4,309,060, Cl. 303-106.000.
Leland Stanford Junior University, The Board of Trustees of the: *See*—
Merkle, Ralph C., 4,309,569, Cl. 178-22.080.
Lelental, Mark; and Sandhu, Mohammad A., to Eastman Kodak Company. Polyester interlayers for electrically activatable recording (ear) elements. 4,309,497, Cl. 430-48.000.
Le Mehaute, Alain: *See*—
Brec, Raymond; Le Mehaute, Alain; and Dugast, Alain, 4,309,491, Cl. 429-112.000.
Lemke, Harold C.; and Rohowetz, Stanley E., to American Can Company. Apparatus for adhering a can opening key to a container. 4,309,237, Cl. 156-521.000.
Lenihan, Harry J., Jr.; and Evans, Thomas C., Jr. Lower sealing means for chromatographic column. 4,309,286, Cl. 210-198.200.
Lenson, Harry. Embroidery machine having improved thread supply system. 4,308,812, Cl. 112-97.000.
Lermann, Peter: *See*—
Stemme, Otto; Lermann, Peter; Wagner, Karl; Engelsmann, Dieter; and Schroder, Rolf, 4,309,097, Cl. 354-173.000.
Les Guitares Norman Inc.: *See*—
Boucher, Normand, 4,308,780, Cl. 84-293.000.
Lesher, George Y.; Opalka, Chester J., Jr.; and Page, Donald F., to Sterling Drug Inc. Production of imidazo[4,5-b]pyridin-2-ones or thiones. 4,309,537, Cl. 544-127.000.
Lett, Stephan C. Spoiler for flatback vehicles. 4,309,053, Cl. 296-1.00S.
Lever Brothers Company: *See*—
Rapisarda, Anthony A.; and Romeo, Joseph, 4,309,299, Cl. 252-95.000.
Levine, Melvin; Jacobetz, Paul J.; and Sperry, Elmer A., III, to Beckman Instruments, Inc. Hydrazine analyzer. 4,309,262, Cl. 204-195.00R.
Levinson, Vladimir A.: *See*—
Zitser, Vitaly A.; Melnikov, Alexandr V.; Bachelis, Leonid V.; Shishkin, Nikolai K.; Morozov, Jury E.; Ivanov, Vladimir A.; Olshansky, Semen A.; Dreishev, Igor I.; Stolyar, Eduard A.; Kushelman, Vladimir S.; Shartner, Eduard G.; Abaskalov, Vladimir D.; and Levinson, Vladimir A., 4,308,909, Cl. 164-207.000.
LGZ Landis & Gyr Zug AG: *See*—
Lienhard, Heinz; and Schneider, Gernot, 4,309,655, Cl. 324-117.00R.
Lhospice, Bernard, to Essilor International. Nose plate holder spectacle frames. 4,309,086, Cl. 351-140.000.
Li, Vincent H.: *See*—
Ashley, Holvor W.; and Li, Vincent H., 4,309,112, Cl. 356-436.000.
Licentia Patent-Verwaltungs G.m.b.H.: *See*—
Kempe, Wolfgang, 4,309,688, Cl. 338-25.000.
Liedtke, Karl-Heinz; and Rachner, Horst, to ITT Industries, Inc. Control arrangement for windshield wiper apparatus. 4,309,646, Cl. 318-443.000.
Lienhard, Heinz; and Schneider, Gernot, to LGZ Landis & Gyr Zug AG. Measuring transformer. 4,309,655, Cl. 324-117.00R.
Lillybeck, Norman P.; and Dell'Agnese, David E., to Modern Equipment Company. Cupola with auxiliary gas generator. 4,309,024, Cl. 266-138.000.
Lin, Jih-Shyan; Lin, Wuu-Shyong; Chen, Kwei-Lin; and Wen, Chen-Jiing. Electric conductive type steam trap. 4,308,889, Cl. 137-187.000.
Lin, Wuu-Shyong: *See*—
Lin, Jih-Shyan; Lin, Wuu-Shyong; Chen, Kwei-Lin; and Wen, Chen-Jiing, 4,308,889, Cl. 137-187.000.
Lindley, John M. Foldable chair and associated cushion adjusting apparatus. 4,309,057, Cl. 297-58.000.
Lindsley, Warren F. B.: *See*—
Mineck, Fred, 4,309,367, Cl. 261-121.00A.
Lingl Corporation: *See*—
Lingl, Hans, Sr.; and Lingl, Hans, Jr., 4,308,772, Cl. 83-23.000.
Lingl, Hans, Jr.: *See*—
Lingl, Hans, Sr.; and Lingl, Hans, Jr., 4,308,772, Cl. 83-23.000.
Lingl, Hans, Sr.; and Lingl, Hans, Jr., to Lingl Corporation. Procedure and device for cutting brick blanks from clay columns. 4,308,772, Cl. 83-23.000.
Lion Corporation: *See*—
Sekiguchi, Shizuo; Tano, Tetsuo; and Kitano, Kyozo, 4,309,317, Cl. 252-555.000.
Liqui-Box Corporation: *See*—
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Lisitsa, Evgeny I.; Gursky, Alexandr M.; Kuimov, Vitaly G.; Makazan, Jury S.; Paulsky, Alexandr V.; Reznichenko, Fedor A.; Romanov, Alexandr V.; and Uzorovsky, Efim L. Hydraulic press. 4,308,745, Cl. 72-453.180.
Lissillour, Albert M. Protective device for low-voltage lines. 4,309,736, Cl. 361-119.000.
Litton Industrial Products, Inc.: *See*—
Bricker, Robert E., 4,308,694, Cl. 51-165.800.
Litton Systems, Inc.: *See*—
McNair, Fred; and Wirt, Thomas M., 4,309,107, Cl. 356-350.000.
Litz, Donald C., to Westinghouse Electric Corp. Integrated fluid dynamoelectric machine. 4,309,621, Cl. 290-52.000.
Lloyd, Ralph E. Trim molding. 4,308,704, Cl. 52-716.000.
Lo, Young S.; and Munson, Harry R., Jr., to A. H. Robins Company, Inc. Synthesis of 4-nitro-1,2-hydrocarbyl pyrazolidines and process for preparation thereof. 4,309,552, Cl. 548-356.000.
Lock, Brian E., to RCA Corporation. Method and apparatus for coating recorded discs with a lubricant. 4,309,456, Cl. 427-209.000.
Lockett, James F.: *See*—
Hoover, Michael C.; Brazell, Charles R.; Mehta, Shyam B.; Lockett, James F.; and Codding, Elias H., 4,308,959, Cl. 209-563.000.
Lockhart, James A., Jr.; and Chang, Shung-huei, to Burroughs Corporation. Apparatus for analyzing semiconductor memories. 4,309,657, Cl. 324-158.00R.
Loctite Corporation: *See*—
Baccei, Louis J., 4,309,526, Cl. 528-75.000.
Valitsky, Robert A., 4,309,334, Cl. 260-42.150.
Loewy Robertson Engineering Co., Ltd.: *See*—
Guppy, David W., 4,308,697, Cl. 52-64.000.
Logsdon, Daniel D., to Logsdon Foundation, The. Sound insulating support for plumbing pipes. 4,309,007, Cl. 248-56.000.
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Logsdon, Daniel D., 4,309,007, Cl. 248-56.000.
Lombardino, Joseph G., to Pfizer Inc. Benzothiazine dioxide derivatives. 4,309,427, Cl. 424-246.000.
Loncrini, Donald F.; and Taylor, John J., to Mallinckrodt, Inc. Methods for preparing eutectic mixtures of p-hydroxybenzoic acid esters. 4,309,564, Cl. 560-67.000.
Long, Alvin L. Air deflector support structure. 4,309,056, Cl. 296-91.000.
Long, Douglas G.; Hemrich, William R.; and Shaw, Nicholas A., to Sunbeam Corporation. Hair dryer. 4,309,595, Cl. 219-370.000.
Long Mile Rubber Company: *See*—
Witherspoon, Phillip L., 4,309,234, Cl. 156-96.000.
Long, William H., to Minnesota Mining and Manufacturing Company. Pulsed radiation source adapted for curing dental restoratives. 4,309,617, Cl. 250-504.00H.
Losch, Eugene R. Distance measuring device. 4,308,665, Cl. 33-141.00E.
Loup, Ronald L., to Double A Products Co. Terminal blocks and indicator for solenoid valves. 4,308,891, Cl. 137-551.000.
Lowe, Jerome R.; and Russo, Frank P., to J & S Hydraulics, Inc. Tube expander. 4,308,736, Cl. 72-36.000.
Lucas Industries Limited: *See*—
Craven, John, 4,309,151, Cl. 417-206.000.
Lucas, James M.; Perricone, Alphonse C.; and Enright, Dorothy P., to Milchem Incorporated. Aqueous drilling fluid additive. 4,309,329, Cl. 260-29.6TA.
Luckock, Glenn W.: *See*—
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Ludke, William E.: *See*—
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Luenser, Susan J.: *See*—
Smith, Jay A.; and Luenser, Susan J., 4,309,505, Cl. 435-193.000.
Luhn, Wolfgang: *See*—
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Lydiate, Jack: *See*—
Serban, Alexander; Farquharson, Graeme J.; Bird, Graham J.; and Lydiate, Jack, 4,309,211, Cl. 71-93.000.
Lynnworth, Lawrence C.: *See*—
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M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See*—
Vollhardt, Frohmut, 4,309,196, Cl. 48-77.000.
Mabry, David L.: *See*—
Kaine, Albert A., Jr.; and Mabry, David L., 4,308,851, Cl. 124-35.00A.
Macaire, Marcel; and Mircovich, Jean-Louis, to Gerin, Merlin. Gas circuit breaker having independent main and arcing circuits. 4,309,581, Cl. 200-148.00R.
MacDonald, Paul M., to P.X. Industries, Inc. Allen wrench handle. 4,308,770, Cl. 81-177.00A.
Machida, Yoshimasa: *See*—
Nomoto, Seiichiro; Ikuta, Hironori; Machida, Yoshimasa; Negi, Shigeto; Sugiyama, Isao; Yamauchi, Hiroshi; Nakatsuka, Kenro; and Saito, Isao, 4,309,354, Cl. 260-345.200.

Machines Dubuit Societe Anonyme: *See—*
Dubuit, Jean-Louis, 4,308,792, Cl. 101-38.00A.
MacMillan Bloedel Limited: *See—*
Martin, Thomas J., 4,309,175, Cl. 493-92.000.
MacPherson, William F.; Scott, Robert S.; and Shackle, Peter W., to Bell Telephone Laboratories, Incorporated. Integral turn-on high voltage switch. 4,309,715, Cl. 357-37.000.
Maddron, William F. Thermal body suit. 4,308,622, Cl. 2-79.000.
Madsen, Ricky J.: *See—*
Kronfeld, Leonard E.; and Madsen, Ricky J., 4,309,732, Cl. 360-104.000.
Maeda, Katsumi, to Star Seimitsu Kabushiki Kaisha. Print head assembly of wire dot matrix printer. 4,309,116, Cl. 400-124.000.
Magassy, Csaba: *See—*
O'Roark, Wayne; and Magassy, Csaba, 4,309,449, Cl. 426-68.000.
Mages, Walter: *See—*
Voigtlander, Otto; and Mages, Walter, 4,308,760, Cl. 74-459.500.
Magna Corporation: *See—*
Blair, Charles M., Jr., 4,309,306, Cl. 252-358.000.
Maguire, Eileen: *See—*
Dillard, David A.; Maguire, Eileen; and Donovan, Lawrence P., 4,309,462, Cl. 427-304.000.
Mahaffy & Harder Engineering Co.: *See—*
Mahaffy, Reid A.; and Mainberger, Walter A., 4,308,711, Cl. 53-511.000.
Mahaffy, Reid A.; and Mainberger, Walter A., to Mahaffy & Harder Engineering Co. Packaging apparatus and techniques for forming closure-tops. 4,308,711, Cl. 53-511.000.
Mahl, Willy: *See—*
Grabow, Kurt; Mahl, Willy; Muller, Karl-Heinz; Kochendorfer, Heinrich; Bertsch, Dieter; Mayer, Siegfried; Anhenn, Jorg; and Dworak, Wilhelm, 4,309,158, Cl. 418-132.000.
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Mainberger, Walter A.: *See—*
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Maiocco, Guiseppe, to Arman S.p.A. Device for connecting a wiper blade holder to a wiper arm. 4,308,635, Cl. 15-250.320.
Majewicz, Thomas G., to Hercules Incorporated. Method of improving dispersibility of anionic cellulose ethers. 4,309,535, Cl. 536-85.000.
Makazan, Jury S.: *See—*
Lisitsa, Evgeny I.; Gursky, Alexandr M.; Kuimov, Vitaly G.; Makazan, Jury S.; Paulsky, Alexandr V.; Reznichenko, Fedor A.; Romanov, Alexandr V.; and Uzorovsky, Efim L., 4,308,745, Cl. 72-453.180.
Makimura, Minoru: *See—*
Kajikawa, Takashi; Makimura, Minoru; Kunise, Satoru; and Furuitsu, Satoshi, 4,309,227, Cl. 148-16.600.
Makino, Itsuo: *See—*
Hirai, Kentaro; Ishiba, Teruyuki; Matsutani, Shigeru; Makino, Itsuo; Fujishita, Toshio; Doteuchi, Masami; and Otani, Koichi, 4,309,433, Cl. 424-266.000.
Makino, Niro, to Nippondenso Co. Ltd. Centrifugal rpm governor for fuel injected internal combustion engines. 4,308,833, Cl. 123-368.000.
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Loncrini, Donald F.; and Taylor, John J., 4,309,564, Cl. 560-67.000.
Mallory, Edwin E.; and Bourassa, Hugh, to National-Standard Company. Retractable bead setter assembly and method of operation thereof. 4,309,235, Cl. 156-131.000.
Malone, Jerald C. Suspended tent and rain guard apparatus. 4,308,883, Cl. 135-8.000.
Malyon, Derek J., to Post Office, The. Control apparatus. 4,309,671, Cl. 331-94.50S.
Mandl, William J. Residential monitoring and control system. 4,308,911, Cl. 165-22.000.
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Allain, Ronald J.; and Maniscalco, Joseph P., 4,309,556, Cl. 556-430.000.
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Daviot, Jean; and Marchais, Michel, 4,309,371, Cl. 264-43.000.
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Hill, Stewart C., 4,309,709, Cl. 343-727.000.
Marconi Instruments Limited: *See—*
Owen, David P., 4,309,674, Cl. 332-18.000.
Martin, Danny W. Intermittent light movement jewelry pendant. 4,309,743, Cl. 362-104.000.
Martin, Hubert; and Beene, Gerald W., to Reliance Electric Company. Instantaneous compressor and instantaneous expandor. 4,309,676, Cl. 333-14.000.
Martin, Jerry D.; Pearson, Stephen J.; Ward, Gary A.; and Winchell, David A., to Baxter Travenol Laboratories, Inc. Collapsible solution container having reduced collapse rate at the end of the collapsing process. 4,308,904, Cl. 150-0.500.
Martin, Jerry R.: *See—*
Chu, Daniel T.; Martin, Jerry R.; and Thomas, Alford M., 4,309,342, Cl. 260-112.50R.
Martin, Kenneth A.: *See—*
Anthony, Andrew J.; and Martin, Kenneth A., 4,309,251, Cl. 376-446.000.
Martin, Lawrence L.; Worm, Manfred; and Crichlow, Charles A., to Hoechst-Roussel Pharmaceuticals Incorporated. 4-Phenyl-1,3-benzodiazepines. 4,309,424, Cl. 424-244.000.
Martin Marietta Corporation: *See—*
Rushworth, Paul M., 4,309,746, Cl. 362-259.000.
Martin, Thomas J., to MacMillan Bloedel Limited. Method of making carton space dividers. 4,309,175, Cl. 493-92.000.
Martini, Thomas: *See—*
Schonberger, Norbert; Schinzel, Erich; Martini, Thomas; and Rosch, Gunter, 4,309,551, Cl. 548-324.000.
Maruhnic, Peter: *See—*
Denker, Bernard L.; and Maruhnic, Peter, 4,309,269, Cl. 208-8.0LE.
Maruscak, John: *See—*
Jackson, Ronald A.; and Maruscak, John, 4,308,934, Cl. 182-184.000.
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Mori, Hiromichi; Maruyama, Tatsuo; Matsumoto, Jun; and Ikeda, Yoshikazu, 4,309,572, Cl. 179-27.0FE.
Marvin Glass & Associates: *See—*
Ferris, Michael J.; Disko, Harry; and Cottone, Sam J., 4,308,684, Cl. 46-39.000.
Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Heeren, Hermann; and Richter, Dietrich, 4,308,913, Cl. 165-68.000.
Mohacsi, Sandor; Fischer, Rudolf; and Raschl, Anton, 4,308,800, Cl. 105-159.000.
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Althausen, Ferdinand; Proksa, Ferdinand; and Osinski, Ulrich, 4,309,373, Cl. 264-51.000.
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Fan, John C. C.; and Zieger, Herbert J., 4,309,225, Cl. 148-1.500.
Probstein, Ronald F.; and Delichatsios, Michael A., 4,309,291, Cl. 210-713.000.
Wurtman, Richard J.; and Wurtman, Judith J., 4,309,445, Cl. 424-325.000.
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Uemura, Toshio; Watanabe, Yoshiki; Masumoto, Yoji; Ishikawa, Tomihisa; Kajimoto, Noboru; and Kawada, Shin, 4,308,806, Cl. 110-244.000.
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Thiltgen, Roger W.; Mathews, T. Richard; and Hurst, Walter L., 4,308,968, Cl. 220-222.000.
Matson, James E.: *See—*
Pedersen, Norman E.; Bradshaw, James E.; Matson, James E.; and Lynnworth, Lawrence C., 4,308,754, Cl. 73-861.280.
Matsuda, Kenji: *See—*
Sato, Akihiro; Kikuta, Kazutsune; Matsuda, Kenji; Uwai, Toshihiro; and Hanari, Tohru, 4,309,521, Cl. 526-114.000.
Matsui, Hideaki: *See—*
Nohira, Hidetaka; Konomi, Toshiaki; and Matsui, Hideaki, 4,308,837, Cl. 123-442.000.
Matsui, Masao: *See—*
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Matsumoto, Fuyuhiko; and Karasawa, Shuichi, to Ricoh Company, Ltd. Electrophotographic development apparatus. 4,308,821, Cl. 118-645.000.
Matsumoto, Jun: *See—*
Mori, Hiromichi; Maruyama, Tatsuo; Matsumoto, Jun; and Ikeda, Yoshikazu, 4,309,572, Cl. 179-27.0FE.
Matsumoto, Kazuya: *See—*
Kuwayama, Tetsuro; Suzuki, Takashi; and Matsumoto, Kazuya, 4,309,093, Cl. 354-59.000.
Matsumoto, Takao, to Tomy Kogyo Co., Inc. Competitive game moving objects through adjacent depressions in an inclined surface. 4,309,034, Cl. 273-86.00D.
Matsushita Electric Industrial Company, Limited: *See—*
Furuya, Nobuaki; Kino, Yoshihiro; and Miyama, Hiroshi, 4,309,679, Cl. 333-195.000.
Kohara, Rikusei; Komoto, Yoshihisa; and Nakajima, Seizo, 4,309,082, Cl. 350-357.000.
Suzuki, Takashi; Sumita, Isao; and Imai, Akihiro, 4,309,482, Cl. 428-413.000.
Matsutani, Shigeru: *See—*
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Mattina, Charles F., to Kimberly-Clark Corporation. Method of making reconstituted tobacco having reduced nitrates. 4,308,877, Cl. 131-297.000.
Matura, Eike: *See—*
Brunn, Klaus; Matura, Eike; Polster, Walter; and Schmitmann, Herbert, 4,309,613, Cl. 250-409.000.
Maxey, David V.: *See—*
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McAllister, Lawrence E.; and Dietrich, Herbert, to Fiber Materials, Inc. Fire retardant polymer resin. 4,309,527, Cl. 528-138.000.
McCombs, Howard L., Jr., to Bendix Corporation, The. Vacuum pump switch. 4,309,149, Cl. 417-63.000.

McCorkle, Dennis L.: *See—*
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Danforth, Mervin A.; Giles, Julian; and Nakahara, Saburo, 4,309,300, Cl. 252-170.000.
Richman, David W., 4,309,268, Cl. 204-301.000.

McDowell, Jerry T., to Ball Corporation. Method for shearing and separating battery grids. 4,308,773, Cl. 83-37.000.

McElroy, James G. High velocity combustion furnace and burner. 4,309,165, Cl. 431-8.000.

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Floyd, Glenn L.; and McElwain, James A., 4,308,920, Cl. 172-328.000.

McGuerty, Jay S. Saxophone mouthpiece having boundary layer control means. 4,308,781, Cl. 84-383.00R.

McIntosh, Billy R.; and Jones, Lawrence R., to Carolina Rubber Hose Company. Method and apparatus for fabricating high pressure hose. 4,309,232, Cl. 156-64.000.

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Harding, Geoffrey L.; McKenzie, David R.; Window, Brian; and Collins, Anthony R., 4,309,261, Cl. 204-192.00R.

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McNair, Fred; and Wirt, Thomas M., to Litton Systems, Inc. Laser gyro dither mechanism. 4,309,107, Cl. 356-350.000.

McReynolds, Billy L.; and Barnett, Richard L., to Power-Flame, Inc. Separable hinge assembly for a door. 4,308,972, Cl. 220-335.000.

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Wood, Prentice J., 4,308,950, Cl. 206-188.000.

Mearl Corporation, The: *See—*
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Meerman, Wilhelmus C. P. M.: *See—*
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Hoover, Michael C.; Brazell, Charles R.; Mehta, Shyam B.; Lockett, James F.; and Codding, Elias H., 4,308,959, Cl. 209-563.000.

Meichsner, Walter, to Thyssen Aktiengesellschaft. Apparatus for carrying out metallurgical reactions in a ladle. 4,309,025, Cl. 266-216.000.

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Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,309,208, Cl. 71-86.000.

Mellor, Malcolm: *See—*
Hope, Peter; and Mellor, Malcolm, 4,309,337, Cl. 260-45.75S.

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Mendenhall, Robert L. Asphaltic concrete recycle exhaust gas treatment apparatus and method. 4,309,113, Cl. 366-4.000.

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Bock, Mark G.; and Smith, Robert L., 4,309,430, Cl. 424-250.000.
Bock, Mark G.; Cragoe, Edward J., Jr.; and Smith, Robert L., 4,309,540, Cl. 544-405.000.
Christensen, Burton G.; Ratcliffe, Ronald W.; and Salzmann, Thomas N., 4,309,346, Cl. 260-239.00A.
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Radunz, Hans-Eckart; Orth, Dieter; Baumgarth, Manfred; Schliep, Hans-Jochen; and Enenkel, Hans-Joachim, 4,309,441, Cl. 424-305.000.

Merkert, Rodney F., to Union Carbide Corporation. Low density compacts of prepared mix for use in the production of silicon and ferrosilicon. 4,309,216, Cl. 75-256.000.

Merkle, Ralph C., to Leland Stanford Junior University, The Board of Trustees of the. Method of providing digital signatures. 4,309,569, Cl. 178-22.080.

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Cassinelli, Giuseppe; Grein, Arpad; Merli, Sergio; and Rivola, Giovanni, 4,309,503, Cl. 435-78.000.

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Bey, Philippe; and Jung, Michel, 4,309,442, Cl. 424-319.000.

Merz, Kenneth M.; and Wesson, Laurence N., to TRW, Inc. Signal transducing unit. 4,309,689, Cl. 338-42.000.

Merz, William C.: *See—*
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Baron, Gerhard; Sauter, Dieter; and Sindel, Wolfgang, 4,309,190, Cl. 44-16.00R.

Metcalf, Thomas G.: *See—*
Ishibe, Nobuyuki; and Metcalf, Thomas G., 4,309,301, Cl. 252-172.000.

Meusel, Wolfgang: *See—*
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Meyer, Artur: *See—*
Daniek, Georg; Meyer, Artur; and Weidemuller, Wolf, 4,309,178, Cl. 8-551.000.

Meyer, Horst, to Hermann C. Starck Berlin. Process for the recovery of hydrofluoric acid and depositable residues during treatment of niobium- and/or tantalum-containing raw materials. 4,309,389, Cl. 423-63.000.

Meyer, Robert: *See—*
Duchene, Jacques; and Meyer, Robert, 4,309,083, Cl. 350-357.000.

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Michaud, Horst; Rock, Heinrich; and Seeholzer, Josef, to SKW Trostberg Aktiengesellschaft. Process for the production of odorless prilled urea-dicyandiamide fertilizers. 4,309,206, Cl. 71-28.000.

Michel, Bernard: *See—*
Arnoux, Daniel; Genter, Claude; Aguettaz, Jean; Berthelot, Alain; and Michel, Bernard, 4,309,682, Cl. 335-128.000.

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Mikogami, Yukihiro; Ito, Takeo; and Wada, Moriyasu, to Tokyo Shibaura Denki Kabushiki Kaisha. Heat-resistant thermosetting resin composition. 4,309,512, Cl. 525-58.000.

Milchem Incorporated: *See—*
Lucas, James M.; Perricone, Alphonse C.; and Enright, Dorothy P., 4,309,329, Cl. 260-29.6TA.

Millar, Robert J.; Stapleton, Charles E.; and Hauf, John M. Liquid volumetric flowmeter. 4,308,755, Cl. 73-861.770.

Miller, Charles M., Jr.; and Orlando, Samuel J., to Columbia Industries, Inc. Polymer alloy bowling ball. 4,309,377, Cl. 264-294.000.

Miller, Dennis B. Method for optimization of image reproduction processes. 4,309,496, Cl. 430-30.000.

Miller, Francis P.: *See—*
Jones, Winton D., Jr.; and Miller, Francis P., 4,309,426, Cl. 424-246.000.

Miller, Richard A., to Stewart Sanitary Supply, Inc. Motor vehicle deodorizing method. 4,309,382, Cl. 422-4.000.

Miller, Stephen J., to Chevron Research Company. Hydrocarbon conversion with low-sodium silicalite. 4,309,276, Cl. 208-109.000.

Milliken Research Corporation: *See—*
Gilpatrick, Michael W.; and Pack, Carroll L., 4,308,649, Cl. 26-2.00R.
Klein, Norman E., 4,308,823, Cl. 118-670.000.

Milosovich, George: *See—*
DeNeale, Richard J.; Guley, Paul C.; and Milosovich, George, 4,309,404, Cl. 424-21.000.
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Minamisawa, Tsuyoshi; and Nohara, Keitsugu, to Toho Beslon Co., Ltd. Non-tacky strand prepreg comprising a resin composition containing a combination of (1) a thermosetting resin and (2) a high molecular weight epoxy resin and a process for forming an article from the same. 4,309,473, Cl. 428-292.000.

Mineck, Fred, to Lindsley, Warren F. B., a part interest. Carburetor employing fuel air mixture means operative prior to carburetion. 4,309,367, Cl. 261-121.00A.

Minnesota Mining and Manufacturing Company: *See—*
Giulie, Joe D., 4,309,046, Cl. 281-21.00R.
Long, William H., 4,309,617, Cl. 250-504.00H.
Schultz, William J.; and Katritzky, Alan R., 4,309,516, Cl. 525-334.000.
Wendling, Larry A., 4,309,529, Cl. 528-289.000.

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Hara, Kyoichi; Yamazaki, Yasuo; and Egawa, Takeshi, 4,309,078, Cl. 350-286.000.
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Mircovich, Jean-Louis: *See—*
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Misawa, Makoto: *See—*
Ahagon, Asahiro; Misawa, Makoto; Hirakawa, Hiroshi; and Miyasaka, Kazuo, 4,309,318, Cl. 260-5.000.

Misik, Norbert, to Waagner-Biro Aktiengesellschaft. Method and installation of filling bunkers by means of lifting bins. 4,308,899, Cl. 141-1.000.

Mita, Nobuaki: *See—*
Sato, Atsushi; Murai, Yoshikazu; and Mita, Nobuaki, 4,309,297, Cl. 252-70.000.

Mitchell, Richard H. Tool tray and support therefor. 4,309,009, Cl. 248-149.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Akamatsu, Masahiko, 4,309,643, Cl. 318-138.000.
Kamoto, Satoru, 4,309,661, Cl. 324-453.000.
Morishita, Mitsuharu, 4,309,648, Cl. 322-28.000.
Sugimoto, Hidehiko, 4,309,750, Cl. 363-138.000.

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Ito, Yoshifumi; Nishimoto, Yoshihiko; Taoda, Kiyomichi; Sato, Fumiaki; Ueda, Takashi; and Uehara, Seibi, 4,308,668, Cl. 34-30.000.
Morimoto, Katsuhiko; Nishida, Sadaji; and Nawate, Shigeo, 4,309,284, Cl. 209-273.000.

Mitsubishi Oil Co., Ltd.: *See—*
Hiroya, Osamu; Ihara, Hiroyuki; and Sanami, Yoshitomo, 4,309,191, Cl. 44-51.000.
Mitsui Coke Co. Ltd.: *See—*
Kubo, Isao; Nagayoshi, Shigemi; Sakata, Futao; Wada, Tetsuo; and Oi, Shoichi, 4,309,192, Cl. 44-51.000.
Mitsui Engineering & Shipbuilding Co., Ltd.: *See—*
Narita, Hitoshi; Kunitake, Yoshikuni; and Yagi, Hikaru, 4,309,172, Cl. 440-67.000.
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Miura, Shozo. Clip hanger. 4,308,981, Cl. 223-96.000.
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Miyagi, Hideo: *See—*
Nakano, Jiro; Ono, Hironobu; and Miyagi, Hideo, 4,308,838, Cl. 123-492.000.
Miyake, Kimio: *See—*
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Miyama, Hiroshi: *See—*
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Miyashita, Kunio: *See—*
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Miyashita, Osamu; and Akimoto, Hiroshi, to Takeda Chemical Industries, Ltd. Maytansinoids. 4,309,428, Cl. 424-248.540.
Mizobuchi, Yuzo: *See—*
Shinozaki, Fumiaki; Namiki, Tomizo; Kitajima, Masao; Ikeda, Tomoaki; and Mizobuchi, Yuzo, 4,309,713, Cl. 346-135.100.
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Mobil Oil Corporation: *See—*
Braid, Milton, 4,309,293, Cl. 252-48.200.
Chester, Arthur W.; Cormier, William E., Jr.; and Stover, William A., 4,309,279, Cl. 208-120.000.
Dessau, Ralph M., 4,309,281, Cl. 208-310.00Z.
Rosinski, Edward J.; and Schwartz, Albert B., 4,309,280, Cl. 208-120.000.
Mobius, Olaf, to Deutsche Gold-und Silber-Scheideanstalt Vormals Roessler. Stiffening and likewise non-slip material for the heel region of shoes containing this material and process for stiffening the heel region of shoes. 4,308,673, Cl. 36-68.000.
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Lillybeck, Norman P.; and Dell'Agnese, David E., 4,309,024, Cl. 266-138.000.
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Mohacsi, Sandor; Fischer, Rudolf; and Raschl, Anton, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Rail vehicle for the transport of heavy and/or bulky goods. 4,308,800, Cl. 105-159.000.
Molders, Werner; and Luhn, Wolfgang, to Stabilus GmbH. Pneumatic spring having selectively releasable rod-retaining structure. 4,309,027, Cl. 267-124.000.
Molini, Alberto E.; and Zener, Clarence. Recovery of enthalpy from hot industrial effluents. 4,308,722, Cl. 60-646.000.
Molls, Hans-Heinz: *See—*
Koll, Jochen; Paulat, Volker; Hornle, Reinhold; Molls, Hans-Heinz; and Nonn, Konrad, 4,309,182, Cl. 8-527.000.
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Momose, Kenichiro; Kumagai, Kiyoshi; and Mori, Fumio, to Tokyo Shibaura Denki Kabushiki Kaisha. Fe-Ni-Cu-Cr Layered bimetal. 4,309,489, Cl. 428-619.000.
Monarch Marking Systems, Inc.: *See—*
St. Aubin, George R., 4,309,468, Cl. 428-42.000.
Monat, Hermann: *See—*
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Mong, Lan N.: *See—*
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Monsanto Company: *See—*
Bogart, Marlowe C., 4,308,654, Cl. 29-451.000.
Fields, Joseph E.; Asculai, Samuel S.; and Johnson, John H., 4,309,413, Cl. 424-78.000.
Garavaglia, Paul M.; and Gutsche, Henry W., 4,309,241, Cl. 156-613.000.
Hudson, Robert B., 4,309,394, Cl. 423-317.000.
Montabert, Roger, to Etablissements Montabert S.A. Pneumatically cushioned percussion apparatus. 4,308,926, Cl. 173-162.00R.
Montedison S.p.A.: *See—*
Chiusoli, Gian P.; Giroldini, William; and Salerno, Giuseppe, 4,309,357, Cl. 260-413.000.
Montplaisir, James J. Fish stringer holder. 4,308,643, Cl. 24-132.00R.
Monzini, Renato. Vehicle tire and wheel construction with selective deformability. 4,308,907, Cl. 152-353.00R.
Moore, John P., to Vosper Thornycroft (UK) Limited. Shell boilers. 4,308,826, Cl. 122-4.00D.
Moore, Raymond J., to Rajac Corporation. Method and apparatus for fastening misaligned structural members. 4,309,123, Cl. 403-408.000.
Morgan Construction Company: *See—*
Klusmier, Kenneth L., 4,308,958, Cl. 209-518.000.
Mori, Fumio: *See—*
Momose, Kenichiro; Kumagai, Kiyoshi; and Mori, Fumio, 4,309,489, Cl. 428-619.000.
Mori, Hiromichi; Maruyama, Tatsuo; Matsumoto, Jun; and Ikeda, Yoshikazu, to Kokusai Denshin Denwa Co., Ltd. Call processing system with an operator assistance in a telephone switching system. 4,309,572, Cl. 179-27.0FE.
Morimoto, Katsuhiko; Nishida, Sadaji; and Nawate, Shigeo, to Mitsubishi Jukogyo Kabushiki Kaisha. Screen device for paper material. 4,309,284, Cl. 209-273.000.
Morishita, Mitsuharu, to Mitsubishi Denki Kabushiki Kaisha. Control device for battery charging AC generator. 4,309,648, Cl. 322-28.000.
Morishita, Takashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Commutatorless motor device. 4,309,647, Cl. 318-721.000.
Morozov, Jury E.: *See—*
Zitser, Vitaly A.; Melnikov, Alexandr V.; Bachelis, Leonid V.; Shishkin, Nikolai K.; Morozov, Jury E.; Ivanov, Vladimir A.; Olshansky, Semen A.; Dreishev, Igor I.; Stolyar, Eduard A.; Kushelman, Vladimir S.; Shartner, Eduard G.; Abaskalov, Vladimir D.; and Levinson, Vladimir A., 4,308,909, Cl. 164-207.000.
Morris, Gary C., to Harnischfeger Corporation. Protective circuits for converter-supplied D.C. motor. 4,309,735, Cl. 361-100.000.
Morris, Henry. Writing aid. 4,308,664, Cl. 33-41.00F.
Morrison, Robert J. Method for measuring eye features with a contact lens. 4,309,085, Cl. 351-39.000.
Mosko, Joseph A., to United States of America, Navy. Wideband direction-finding system. 4,309,706, Cl. 343-100.00R.
Moss, Gerald, to Exxon Research & Engineering Co. Method of converting liquid and/or solid fuel to a substantially inerts-free gas. 4,309,198, Cl. 48-197.00R.
Motorola, Inc.: *See—*
Davis, Earl K.; and Hey, Robert W., 4,309,507, Cl. 501-21.000.
Kloker, Kevin L.; and Pautler, James A., 4,309,772, Cl. 375-76.000.
Sarma, Kalluri R.; and Rice, M. John, Jr., 4,309,259, Cl. 204-164.000.
Mowill, Jan. Bleedoff of gas from diffusers in fluid flow machines. 4,308,718, Cl. 60-39.020.
Moyer, Elmo E.: *See—*
Reimers, Eberhart; and Moyer, Elmo E., 4,309,644, Cl. 318-139.000.
Mueller, Helmut; von Ow, Hans P.; Rambold, Thomas; and Werres, Bernhard, to Siemens Aktiengesellschaft. Process for transmitting items of information between devices of an indirectly controlled exchange system, in particular a telephone exchange system. 4,309,765, Cl. 370-99.000.
Muhr, Dieter, to Keiper Automobiltechnik GmbH & Co. KG. Vertical position adjuster for seats, particularly for motor vehicle seats. 4,309,015, Cl. 248-396.000.
Mulaskey, Bernard F., to Chevron Research Company. Hydrocarbon conversion with crystalline silicates to produce olefins. 4,309,275, Cl. 208-109.000.
Mulkins, George F.; Dombrowski, Jerome P.; and Isliker, Gaston R., to Bendix Corporation, The. Igniter plug. 4,309,738, Cl. 361-253.000.
Muller, Ewald: *See—*
Krauss, Peter; Muller, Ewald; Porner, Horst; and Weber, Robert, 4,309,583, Cl. 219-7.500.
Muller, Karl-Heinz: *See—*
Grabow, Kurt; Mahl, Willy; Muller, Karl-Heinz; Kochendorfer, Heinrich; Bertsch, Dieter; Mayer, Siegfried; Anhenn, Jorg; and Dworak, Wilhelm, 4,309,158, Cl. 418-132.000.
Muller, Klaus: *See—*
Ledouble, Jean-Pierre; and Muller, Klaus, 4,309,360, Cl. 260-453.100.
Muller, Otto; Kullmann, Dieter; and Weghaupt, Erich, to Siemens Aktiengesellschaft. Electric machine with a rotor with a superconducting field winding. 4,309,632, Cl. 310-52.000.
Muller, Walter: *See—*
Neeff, Rutger; Rolf, Meinhard; and Muller, Walter, 4,309,221, Cl. 106-164.000.
Muller, Wolfgang: *See—*
Bender, Werner; Bergner, Dieter; Hannesen, Kurt; Muller, Wolfgang; and Schulte, Wilfried, 4,309,264, Cl. 204-256.000.
Mumcu, Salih: *See—*
Horlbeck, Gernot; and Mumcu, Salih, 4,309,518, Cl. 525-425.000.
Munson, Harry R., Jr.: *See—*
Lo, Young S.; and Munson, Harry R., Jr., 4,309,552, Cl. 548-356.000.
Munz, Johann, to Team Form AG. Arrangement for detachable joining of construction parts. 4,308,802, Cl. 108-156.000.
Murai, Yoshikazu: *See—*
Sato, Atsushi; Murai, Yoshikazu; and Mita, Nobuaki, 4,309,297, Cl. 252-70.000.
Muramatsu, Toyojiro: *See—*
Inagi, Toshio; Muramatsu, Toyojiro; and Nagai, Hidetaka, 4,309,414, Cl. 424-81.000.
Murata Manufacturing Co., Ltd.: *See—*
Nakamura, Takeshi; Kato, Suehiro; and Nishiyama, Hiroshi, 4,309,266, Cl. 204-298.000.

Murray Corporation: *See—*
Fay, Robert F., 4,308,648, Cl. 24-274.00R.
Murray, Lawrence K., to Phillips Petroleum Company. Startup procedure. 4,309,400, Cl. 423-450.000.
Muta, Natsuo; and Kanamaru, Toshihisa, to Kabushiki Kaisha Kankyo Kaihatsu. Apparatus for reinforcing and repairing piping. 4,308,824, Cl. 118-713.000.
Mycynek, Victor G., to Zenith Radio Corporation. Dual time constant AFC filter. 4,309,724, Cl. 358-195.100.
Myers, Harold K. Pacer device. 4,309,599, Cl. 235-92.0TF.
Myers, James E., Jr. Liquid tire sealant injection tool. 4,308,766, Cl. 81-15.600.
Myers, William N.: *See—*
Hein, Leopold A.; and Myers, William N., 4,309,146, Cl. 415-2.00R.
N-S-W Corporation: *See—*
Wilmeth, Claude H., 4,308,767, Cl. 81-57.390.
Nagai, Hidetaka: *See—*
Inagi, Toshio; Muramatsu, Toyojiro; and Nagai, Hidetaka, 4,309,414, Cl. 424-81.000.
Nagai, Shunichi; and Umano, Yasuhiro, to Kabushiki Kaisha Komatsu Seisakusho. Trouble detecting unit in an optical security device. 4,309,696, Cl. 340-515.000.
Nagayoshi, Shigemi: *See—*
Kubo, Isao; Nagayoshi, Shigemi; Sakata, Futao; Wada, Tetsuo; and Oi, Shoichi, 4,309,192, Cl. 44-51.000.
Naito, Hiroshi: *See—*
Naruse, Tsutomu; Osagawa, Takao; Naito, Hiroshi; Matsui, Masao; and Okamoto, Kazuo, 4,309,479, Cl. 428-397.000.
Naito, Michinori, to Trio Kabushiki Kaisha. Phase synchronizer. 4,309,649, Cl. 323-212.000.
Nakabayashi, Masamitsu; Doura, Fumihiro; and Furukawa, Yuzo, to Takeda Chemical Industries, Ltd. Production of sphere-formed powdery copolymers. 4,309,525, Cl. 528-487.000.
Nakae, Isoji, to Kishu Neji Co., Ltd. Self-locking fastening device. 4,309,139, Cl. 411-187.000.
Nakagawa, Kazuyuki: *See—*
Tanaka, Nobuyuki; Nishinakamura, Yoichi; and Nakagawa, Kazuyuki, 4,309,432, Cl. 424-258.000.
Nakagawa, Yasuo: *See—*
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Nakagawa, Yasushi: *See—*
Hiramatsu, Eizi; Nakagawa, Yasushi; and Sato, Hidenori, 4,308,840, Cl. 123-519.000.
Nakahara, Saburo: *See—*
Danforth, Mervin A.; Giles, Julian; and Nakahara, Saburo, 4,309,300, Cl. 252-170.000.
Nakahara, Yutaka: *See—*
Akutsu, Mitsuo; Nakahara, Yutaka; and Kitsukawa, Kazumi, 4,309,335, Cl. 260-45.7PH.
Nakajima, Nobuyoshi: *See—*
Terashima, Toshikatsu, 4,309,118, Cl. 400-697.100.
Nakajima, Seizo: *See—*
Kohara, Rikusei; Komoto, Yoshihisa; and Nakajima, Seizo, 4,309,082, Cl. 350-357.000.
Nakamura, Hiroya; and Taguchi, Hiromi, to Konishiroku Photo Industry Co., Ltd. System for controlling apparatus for composite-recording information. 4,309,101, Cl. 355-14.00R.
Nakamura, Masashi, to Nissan Motor Company, Ltd. Surface-activated functional materials and a method of producing the same. 4,309,315, Cl. 252-472.000.
Nakamura, Takeshi; Kato, Suehiro; and Nishiyama, Hiroshi, to Murata Manufacturing Co., Ltd. Magnetron sputtering apparatus. 4,309,266, Cl. 204-298.000.
Nakamura, Tsutomu; Nakagawa, Yasuo; Kai, Osamu; and Shimada, Keizo, to Teijin Limited. Core-in-sheath type aromatic polyamide fiber and process for producing the same. 4,309,476, Cl. 428-373.000.
Nakano, Jiro; Ono, Hironobu; and Miyagi, Hideo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Acceleration signal detector. 4,308,838, Cl. 123-492.000.
Nakano, Shosaburo; Hiro, Toshiharu; Nishiyama, Noboru; Agusa, Kazuo; and Kosho, Masaaki, to Kawasaki Steel Corporation. Horizontal electro-slag welding process for surfacing. 4,309,587, Cl. 219-73.110.
Nakatsuka, Kenro: *See—*
Nomoto, Seiichiro; Ikuta, Hironori; Machida, Yoshimasa; Negi, Shigeto; Sugiyama, Isao; Yamauchi, Hiroshi; Nakatsuka, Kenro; and Saito, Isao, 4,309,354, Cl. 260-345.200.
Nakayama, Yasuharu: *See—*
Aihara, Tetsuo; Nakayama, Yasuharu; and Yamashita, Yoshio, 4,309,321, Cl. 260-23.0CP.
Nalco Chemical Company: *See—*
Adams, Paul G.; and Cruell, John T., 4,309,020, Cl. 249-204.000.
Allain, Ronald J.; and Maniscalco, Joseph P., 4,309,556, Cl. 556-430.000.
Nally, Robert B.; and Jackola, David J., to NCR Canada Ltd. - NCR Canada Ltee. Moving head reader mechanism. 4,309,601, Cl. 235-449.000.
Namiki, Tomizo: *See—*
Shinozaki, Fumiaki; Namiki, Tomizo; Kitajima, Masao; Ikeda, Tomoaki; and Mizobuchi, Yuzo, 4,309,713, Cl. 346-135.100.
Narita, Hitoshi; Kunitake, Yoshikuni; and Yagi, Hikaru, to Mitsui Engineering & Shipbuilding Co., Ltd. Ship with improved stern structure. 4,309,172, Cl. 440-67.000.
Naruse, Tsutomu; Osagawa, Takao; Naito, Hiroshi; Matsui, Masao; and Okamoto, Kazuo, to Kanebo, Ltd. Conductive composite filaments. 4,309,479, Cl. 428-397.000.
National Can Corporation: *See—*
Sauer, Donald G., 4,309,380, Cl. 264-511.000.
National Distillers & Chemical Corp.: *See—*
Fischer, Joseph; and Hoyt, John M., 4,309,332, Cl. 260-40.00R.
National Institute of Radiological Sciences: *See—*
Tanaka, Eiichi; Nohara, Norimasa; Tomitani, Takehiro; Ishimatsu, Kenji; and Takami, Katsumi, 4,309,611, Cl. 250-363.00S.
National Research Development Corporation: *See—*
James, James R.; James, William; and Drewett, Robert J., 4,309,707, Cl. 343-895.000.
Maynard, Douglas E., 4,308,873, Cl. 128-731.000.
National Research Institute for Metals: *See—*
Hashimoto, Tatsuya; Inagaki, Michio; Irie, Hirosada; and Tukamoto, Susumu, 4,309,589, Cl. 219-121.0ED.
National-Standard Company: *See—*
Mallory, Edwin E.; and Bourassa, Hugh, 4,309,235, Cl. 156-131.000.
Nawate, Shigeo: *See—*
Morimoto, Katsuhiko; Nishida, Sadaji; and Nawate, Shigeo, 4,309,284, Cl. 209-273.000.
NCR Canada Ltd. - NCR Canada Ltee: *See—*
Nally, Robert B.; and Jackola, David J., 4,309,601, Cl. 235-449.000.
NCR Corporation: *See—*
Wills, David C.; Lawter, Raymond L.; Briggs, Barry D.; and Sampson, Edward F., 4,308,795, Cl. 101-93.370.
Neeff, Rutger; Rolf, Meinhard; and Muller, Walter, to Bayer Aktiengesellschaft. Anthraquinone derivatives. 4,309,221, Cl. 106-164.000.
Negi, Shigeto: *See—*
Nomoto, Seiichiro; Ikuta, Hironori; Machida, Yoshimasa; Negi, Shigeto; Sugiyama, Isao; Yamauchi, Hiroshi; Nakatsuka, Kenro; and Saito, Isao, 4,309,354, Cl. 260-345.200.
Negi, Virendra S.; and Peters, Arthur, to Honeywell Information System Inc. Apparatus and method for next address generation in a data processing system. 4,309,753, Cl. 364-200.000.
Nestler, Hans J.: *See—*
Koch, Manfred; and Nestler, Hans J., 4,309,547, Cl. 546-301.000.
Netstal-Maschinen AG: *See—*
Egger, Caspar; and Krebser, Rudolf, 4,309,164, Cl. 425-589.000.
Neubert, Robert. Methods and means for minimizing floor dust problems. 4,309,470, Cl. 428-96.000.
Neumann, Berthold: *See—*
Girodi, Erich; Richter, Gerhard; Neumann, Berthold; Jaschke, Peter; Slabik, Johannes; Weber, Roland; Schmidt, Andrea; Krieg, Peter; Groschel, Lutz; Heynisch, Joachim; Starke, Joachim; Wienold, Dietrich; Scholz, Gunter; and Monch, Eckehard, 4,309,193, Cl. 48-66.000.
Neumeier, Paul J.: *See—*
Kalthoff, Robert J.; and Neumeier, Paul J., 4,308,960, Cl. 209-612.000.
New Japan Radio Co., Ltd.: *See—*
Okabe, Tadatoshi, 4,309,605, Cl. 250-239.000.
NGK Spark Plug Co., Ltd.: *See—*
Kondo, Kazuo; and Takami, Akio, 4,309,485, Cl. 428-457.000.
Nguyen, Xuan T., to Domtar Inc. Fluidized bed sulfur dioxide removal. 4,309,393, Cl. 423-244.000.
Nichols Engineering & Research Corp.: *See—*
Spater, Stuart S., 4,308,805, Cl. 110-163.000.
NIckerson, James H. D.: *See—*
Ruhe, Anthony; and NIckerson, James H. D., 4,308,914, Cl. 165-160.000.
Niedecker, Herbert. U-Shaped clip made from strip material. 4,308,641, Cl. 24-30.50W.
Niedermeyer, Karl O. Protection device and sump pump. 4,309,157, Cl. 417-421.000.
Niesen, George P.: *See—*
Pudark, Arthur A.; Niesen, George P.; Bach, Frederick O.; and Shukla, Mahendra B., 4,309,102, Cl. 355-14.0SH.
Niesor, Eric: *See—*
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Nifco Inc.: *See—*
Tanaka, Toshie; and Hara, Kunio, 4,309,137, Cl. 411-45.000.
Nihon Kogyo Kabushiki Kaisha: *See—*
Kawasumi, Yoshio; and Takahashi, Mitsuo, 4,309,457, Cl. 427-214.000.
Kawasumi, Yoshio; and Takahashi, Mitsuo, 4,309,458, Cl. 427-217.000.
Nijman, Willem: *See—*
van Oirschot, Theodorus G. J.; Nijman, Willem; and Fougeres, Marc P. A., 4,308,820, Cl. 118-412.000.
Nikki-Universal Co., Ltd.: *See—*
Takumi, Shizuo; Hashimoto, Toshio; and Tatsushima, Masaru, 4,309,312, Cl. 252-448.000.
Nippon Bearing Company Limited: *See—*
Suzuki, Koji, 4,309,680, Cl. 333-197.000.
Nippon Colin Co., Ltd.: *See—*
Shouda, Hiroyuki; and Sakurado, Kenichi, 4,308,871, Cl. 128-686.000.
Nippon Denso Kabushiki Kaisha: *See—*
Hiramatsu, Eizi; Nakagawa, Yasushi; and Sato, Hidenori, 4,308,840, Cl. 123-519.000.
Nippon Electric Co., Ltd.: *See—*
Takahashi, Toru, 4,309,625, Cl. 307-272.00A.

Ueno, Masayasu; Yonezu, Hiroo; and Lang, Roy, 4,309,668, Cl. 331-94.50H.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Suzuki, Hideo; Itakura, Kenji; and Uchiyama, Yasuji, 4,308,779, Cl. 84-1.190.
Nippon Kogaku K.K.: *See*—
Fukuhara, Toru; and Saegusa, Takashi, 4,309,091, Cl. 354-31.000.
Nippon Oil Company, Ltd.: *See*—
Yuasa, Hitoshi; and Imai, Hirosuke, 4,309,324, Cl. 260-29.20N.
Nippon Paint Co., Ltd.: *See*—
Ishikura, Shinichi; Mizuguchi, Ryuzo; Ishii, Keizou; and Yoshioka, Tamotu, 4,309,327, Cl. 260-29.60H.
Nippon Petrochemicals Company, Ltd.: *See*—
Sato, Atsushi; Murai, Yoshikazu; and Mita, Nobuaki, 4,309,297, Cl. 252-70.000.
Nippon Sanso K.K.: *See*—
Harada, Hikaru; Akiyama, Teruo; and Hiyama, Tuneo, 4,309,385, Cl. 422-83.000.
Nippondenso Co. Ltd.: *See*—
Makino, Niro, 4,308,833, Cl. 123-368.000.
Nishi, Ikuo, to Kabushiki Kaisha Komatsu Seisakusho. Automatic pressure control apparatus for counterbalancer. 4,308,735, Cl. 72-21.000.
Nishida, Sadaji: *See*—
Morimoto, Katsuhiko; Nishida, Sadaji; and Nawate, Shigeo, 4,309,284, Cl. 209-273.000.
Nishimoto, Yoshihiko: *See*—
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Nishimura, Itsuro; and Takahashi, Yoshimasa, to Sanyo Electric Co., Ltd. Translucent screen assembly. 4,309,073, Cl. 350-128.000.
Nishimura, Toshio, to Sharp Kabushiki Kaisha. LSI Device including a liquid crystal display drive. 4,309,701, Cl. 340-784.000.
Nishinakamura, Yoichi: *See*—
Tanaka, Nobuyuki; Nishinakamura, Yoichi; and Nakagawa, Kazuyuki, 4,309,432, Cl. 424-258.000.
Nishioka, Toshio: *See*—
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Nishiyama, Hiroshi: *See*—
Nakamura, Takeshi; Kato, Suehiro; and Nishiyama, Hiroshi, 4,309,266, Cl. 204-298.000.
Nishiyama, Noboru: *See*—
Nakano, Shosaburo; Hiro, Toshiharu; Nishiyama, Noboru; Agusa, Kazuo; and Kosho, Masaaki, 4,309,587, Cl. 219-73.110.
Nishiyama, Toyoo: *See*—
Saitou, Sinichi; Kato, Toshikazu; Watanabe, Seizo; Nishiyama, Toyoo; Shimoda, Misao; Shibata, Tutomu; Kimura, Kenji; and Satoh, Ken, 4,309,002, Cl. 242-198.000.
Nissan Motor Company, Limited: *See*—
Fukunaga, Yukio, 4,309,012, Cl. 248-27.100.
Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, 4,308,765, Cl. 74-869.000.
Nakamura, Masashi, 4,309,315, Cl. 252-472.000.
Saito, Masaaki, 4,308,890, Cl. 137-495.000.
Sugasawa, Fukashi; and Iizuka, Haruhiko, 4,308,831, Cl. 123-198.00F.
Takata, Yasunobu, 4,309,740, Cl. 362-66.000.
Nissen, Peter: *See*—
Appel, Eggert; and Nissen, Peter, 4,308,752, Cl. 73-861.120.
Nissen, Reinhard; and Graf, Rupprecht, to Klockner-Humboldt-Deutz AG. Method for the cementation of metals. 4,309,215, Cl. 75-109.000.
Nohara, Keitsugu: *See*—
Minamisawa, Tsuyoshi; and Nohara, Keitsugu, 4,309,473, Cl. 428-292.000.
Nohara, Norimasa: *See*—
Tanaka, Eiichi; Nohara, Norimasa; Tomitani, Takehiro; Ishimatsu, Kenji; and Takami, Katsumi, 4,309,611, Cl. 250-363.00S.
Nohira, Hidetaka; Konomi, Toshiaki; and Matsui, Hideaki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Intake system of an internal combustion engine. 4,308,837, Cl. 123-442.000.
Nomoto, Seiichiro; Ikuta, Hironori; Machida, Yoshimasa; Negi, Shigeto; Sugiyama, Isao; Yamauchi, Hiroshi; Nakatsuka, Kenro; and Saito, Isao, to Eisai Co., Ltd. Chromone derivatives. 4,309,354, Cl. 260-345.200.
Nonaka, Yuji: *See*—
Kubo, Masashige; Nonaka, Yuji; and Kihara, Keiichi, 4,309,341, Cl. 260-112.50R.
Nonn, Konrad: *See*—
Koll, Jochen; Paulat, Volker; Hornle, Reinhold; Molls, Hans-Heinz; and Nonn, Konrad, 4,309,182, Cl. 8-527.000.
Koll, Jochen; Paulat, Volker; Hornle, Reinhold; Molls, Hans-Heinz; and Nonn, Konrad, 4,309,183, Cl. 8-527.000.
Norberg, Gayle R.; and Petrich, Dennis M., to Control Data Corporation. Delay lock loop modulator and demodulator. 4,309,673, Cl. 332-16.00R.
Norddeutsche Seekabelwerke Aktiengesellschaft: *See*—
Rabenecker, Klaus, 4,309,375, Cl. 264-167.000.
Northern Telecom Limited: *See*—
Shannon, Michael A.; and Cowley, William E., 4,309,654, Cl. 324-65.00R.
Nortronics Company, Inc.: *See*—
Kronfeld, Leonard E.; and Madsen, Ricky J., 4,309,732, Cl. 360-104.000.
Nosikov, Georgy M.: *See*—
Vikhlyaev, Alexandr A.; Nosikov, Georgy M.; Semenov, Nikolai I.; and Fedulov, Alexandr I., 4,308,922, Cl. 173-18.000.
Nowack, Gerhard P.: *See*—
Johnson, Marvin M.; Tabler, Donald C.; and Nowack, Gerhard P., 4,309,311, Cl. 252-438.000.
Noyes, Ronald T.; and Williams, Eugene E., to Beard Industries, Inc. Advanced optimum continuous crossflow grain drying and conditioning method. 4,308,669, Cl. 34-33.000.
Nuclear Power Company Limited: *See*—
Gilroy, John E., 4,309,252, Cl. 376-290.000.
NuSil Research: *See*—
Compton, Richard A.; and Petraitis, Del J., 4,309,557, Cl. 556-453.000.
Oakley, Inc.: *See*—
Jannard, James H., 4,308,762, Cl. 74-551.900.
Obara, Mitsuo; Kageyama, Akira; and Uchigasaki, Isao, to Hitachi Chemical Company, Ltd. Process for producing flyback transformer. 4,309,519, Cl. 525-445.000.
Oberhardt, Bruce J. Method and means for producing sustained colored flames. 4,309,189, Cl. 44-4.000.
Office National d'Etudes et de Recherche Aerospatiales: *See*—
Hivert, Andre R.; and Galmiche, Philippe M., 4,309,220, Cl. 106-84.000.
O'Hara, Mark J.; and Johnson, Russell W., to UOP Inc. Conversion of hydrocarbons with a catalyst comprising an alumina-zeolite, a group VI-B metallic component and a group VIII metallic component. 4,309,277, Cl. 208-111.000.
Ohara, Saburo: *See*—
Aoki, Kiyoshi; and Ohara, Saburo, 4,309,560, Cl. 560-14.000.
O'Hare, Louis R. Pulsing steam solar water pump. 4,309,148, Cl. 417-18.000.
Ohashi, Takeo: *See*—
Iwatani, Katsumi; and Ohashi, Takeo, 4,309,623, Cl. 307-200.00A.
Ohgushi, Masuhito: *See*—
Koga, Isao; Terui, Yohji; and Ohgushi, Masuhito, 4,309,558, Cl. 556-479.000.
Ohmae, Tadayuki; and Kanno, Yoshinori, to Sumitomo Chemical Company, Limited. Laminated safety glass. 4,309,484, Cl. 428-441.000.
Ohno, Isao: *See*—
Ohno, Nobuo; Ohno, Isao; Nishioka, Toshio; Takeda, Hisami; and Kasamatsu, Kiyoshi, 4,309,439, Cl. 424-282.000.
Ohno, Nobuo; Ohno, Isao; Nishioka, Toshio; Takeda, Hisami; and Kasamatsu, Kiyoshi, to Sumitomo Chemical Company, Limited. Substituted-acetic acid ester. 4,309,439, Cl. 424-282.000.
Ohtsuka, Kunio: *See*—
Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, 4,308,765, Cl. 74-869.000.
Oi, Shoichi: *See*—
Kubo, Isao; Nagayoshi, Shigemi; Sakata, Futao; Wada, Tetsuo; and Oi, Shoichi, 4,309,192, Cl. 44-51.000.
Okabe, Tadatoshi, to New Japan Radio Co., Ltd. Photo-reflective sensor. 4,309,605, Cl. 250-239.000.
Okada, Masanori: *See*—
Yamada, Norimasa; Iwashita, Yoshihiro; Okada, Masanori; and Kanome, Yoshihiro, 4,308,829, Cl. 123-188.00M.
Yamada, Norimasa; Iwashita, Yoshihiro; Okada, Masanori; and Kanome, Yoshihiro, 4,308,830, Cl. 123-188.00M.
Okado, Chihiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Method and apparatus for controlling current type inverters. 4,309,751, Cl. 363-138.000.
Okamoto, Eiichi: *See*—
Andow, Fumio; Knodow, Ryotaro; and Okamoto, Eiichi, 4,309,767, Cl. 371-24.000.
Okamoto, Kazuo: *See*—
Naruse, Tsutomu; Osagawa, Takao; Naito, Hiroshi; Matsui, Masao; and Okamoto, Kazuo, 4,309,479, Cl. 428-397.000.
Okamoto, Kikuhiko: *See*—
Takaishi, Naotake; Urata, Kouichi; Inamoto, Yoshiaki; Okamoto, Kikuhiko; and Tsuchiya, Shuichi, 4,309,448, Cl. 424-365.000.
Okamoto, Shinichi: *See*—
Fukuoka, Tatsuhiko; Fukuda, Takashi; and Okamoto, Shinichi, 4,309,064, Cl. 308-237.00R.
Okanobu, Taiwa, to Sony Corporation. Level indicating circuit. 4,309,656, Cl. 324-131.000.
Okumichi, Toshiharu; and Kawatani, Kimio, to Arakawa Kagaku Kogyo Kabushiki Kaisha. Process for preparing aqueous dispersion of rosin-base materials. 4,309,338, Cl. 260-101.000.
Okumura, Takeshi; and Ikeda, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Helically shaped intake port of an internal combustion engine. 4,308,832, Cl. 123-306.000.
Olshansky, Semen A.: *See*—
Zitser, Vitaly A.; Melnikov, Alexandr V.; Bachelis, Leonid V.; Shishkin, Nikolai K.; Morozov, Jury E.; Ivanov, Vladimir A.; Olshansky, Semen A.; Dreishev, Igor I.; Stolyar, Eduard A.; Kushelman, Vladimir S.; Shartner, Eduard G.; Abaskalov, Vladimir D.; and Levinson, Vladimir A., 4,308,909, Cl. 164-207.000.
Olson, Jack R., to United States of America, Navy. Low-power electromagnetic flowmeter. 4,308,753, Cl. 73-861.170.
Olympus Optical Company Limited: *See*—
Hijikata, Kazuo; and Fujimori, Ryo, 4,308,822, Cl. 118-665.000.
Kitagawa, Masahiro, 4,309,092, Cl. 354-33.000.
Osanai, Akira, 4,309,727, Cl. 360-69.000.

Saitou, Sinichi; Kato, Toshikazu; Watanabe, Seizo; Nishiyama, Toyoo; Shimoda, Misao; Shibata, Tutomu; Kimura, Kenji; and Satoh, Ken, 4,309,002, Cl. 242-198.000.
Tomabechi, Hideo, 4,309,733, Cl. 360-105.000.
O'Meara, Maurice. Strike zone pad. 4,309,031, Cl. 273-25.000.
Omron Tateisi Electronics Co.: *See*—
Iwatani, Katsumi; and Ohashi, Takeo, 4,309,623, Cl. 307-200.00A.
O'Neill, Eugene, to United States Gypsum Company. Lump process alpha gypsum. 4,309,391, Cl. 423-172.000.
Ono, Hironobu: *See*—
Nakano, Jiro; Ono, Hironobu; and Miyagi, Hideo, 4,308,838, Cl. 123-492.000.
Onoue, Keiji; Katoh, Takashi; Yoshida, Yoshiaki; and Seiki, Kazuo, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Dust removing mechanism in open-end spinning frame. 4,308,717, Cl. 57-301.000.
Opalka, Chester J., Jr.: *See*—
Lesher, George Y.; Opalka, Chester J., Jr.; and Page, Donald F., 4,309,537, Cl. 544-127.000.
Optical Coating Laboratory, Inc.: *See*—
Apfel, Joseph H.; and Carniglia, Charles K., 4,309,075, Cl. 350-164.000.
Oretti, John E.: *See*—
Bayly, Peter K.; and Oretti, John E., 4,308,978, Cl. 222-449.000.
Orlando, Samuel J.: *See*—
Miller, Charles M., Jr.; and Orlando, Samuel J., 4,309,377, Cl. 264-294.000.
Orloff, Malcolm K.; and White, LeRoy A., to Buffalo Color Corporation. Melt dyeing of polyethylene with indigo. 4,309,323, Cl. 260-28.50A.
Orndoff, David A.: *See*—
Suresh, Dev D.; Grasselli, Robert K.; and Orndoff, David A., 4,309,361, Cl. 260-465.300.
O'Roark, Wayne; and Magassy, Csaba. Method for preserving live hard-shell crabs by freezing. 4,309,449, Cl. 426-68.000.
Orth, Dieter: *See*—
Radunz, Hans-Eckart; Orth, Dieter; Baumgarth, Manfred; Schliep, Hans-Jochen; and Enenkel, Hans-Joachim, 4,309,441, Cl. 424-305.000.
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Naruse, Tsutomu; Osagawa, Takao; Naito, Hiroshi; Matsui, Masao; and Okamoto, Kazuo, 4,309,479, Cl. 428-397.000.
Osanai, Akira, to Olympus Optical Co., Ltd. Automatic reverse tape recorder with means for stopping the automatic reverse operation during recording. 4,309,727, Cl. 360-69.000.
Oshima, Yashushi, to Yamato Scale Company Limited. Automatic combination weighing machine. 4,308,928, Cl. 177-25.000.
Osinski, Ulrich: *See*—
Althausen, Ferdinand; Proksa, Ferdinand; and Osinski, Ulrich, 4,309,373, Cl. 264-51.000.
Ostreicher, Eugene A.: *See*—
Hou, Kenneth C.; and Ostreicher, Eugene A., 4,309,247, Cl. 162-149.000.
Otani, Koichi: *See*—
Hirai, Kentaro; Ishiba, Teruyuki; Matsutani, Shigeru; Makino, Itsuo; Fujishita, Toshio; Doteuchi, Masami; and Otani, Koichi, 4,309,433, Cl. 424-266.000.
Otis Elevator Company: *See*—
Deric, J. Mark, 4,308,935, Cl. 187-29.00R.
Otsuka Pharmaceutical Company, Ltd.: *See*—
Tanaka, Nobuyuki; Nishinakamura, Yoichi; and Nakagawa, Kazuyuki, 4,309,432, Cl. 424-258.000.
Otterson, Lewis L., to Weatherchem Corporation. Pre-oriented rotor-type dispenser top. 4,308,979, Cl. 222-516.000.
Otto Bilz, Werkzeugfabrik: *See*—
Fauth, Otto; and Hofle, Lothar, 4,309,042, Cl. 279-75.000.
Otto, Michael J.: *See*—
Ray, George C., III; Otto, Michael J.; and Price, Charles E., 4,308,679, Cl. 40-312.000.
Ouellette, Joseph F., to Ouellette Machinery Systems, Inc. Convertible conveyor. 4,308,946, Cl. 198-790.000.
Ouellette Machinery Systems, Inc.: *See*—
Ouellette, Joseph F., 4,308,946, Cl. 198-790.000.
Outboard Marine Corporation: *See*—
Pendry, Warren W.; and Seyerle, Carl E., 4,308,675, Cl. 37-43.00D.
Overton, Richard M. Process and apparatus for forming poured concrete walls. 4,309,369, Cl. 264-31.000.
Owen, David P., to Marconi Instruments Limited. Frequency modulators with compensation for variations in modulation sensitivity. 4,309,674, Cl. 332-18.000.
Owens-Corning Fiberglas Corporation: *See*—
Brooks, Robert, 4,309,204, Cl. 65-28.000.
Parbhoo, Kantilal R., 4,309,202, Cl. 65-3.100.
Sage, Donald B.; and Krautz, Fred G., 4,309,326, Cl. 260-29.6NR.
Williamson, Michael, 4,309,567, Cl. 13-6.000.
Owens-Illinois, Inc.: *See*—
Willingham, Wendell D., 4,308,707, Cl. 53-314.000.
Oy Nokia AB: *See*—
Poutanen, Matti J.; and Heino, Aarne, 4,309,160, Cl. 425-113.000.
P.X. Industries, Inc.: *See*—
MacDonald, Paul M., 4,308,770, Cl. 81-177.00A.
Pack, Carroll L.: *See*—
Gilpatrick, Michael W.; and Pack, Carroll L., 4,308,649, Cl. 26-2.00R.
Page, Donald F.: *See*—
Lesher, George Y.; Opalka, Chester J., Jr.; and Page, Donald F., 4,309,537, Cl. 544-127.000.
Page, James H. R.; and Coombs, Alan, to British Steel Corporation. Electro magnetic steels. 4,309,228, Cl. 148-120.000.
Pahl, Gerrit: *See*—
Sylla, Jurgen; and Pahl, Gerrit, 4,309,087, Cl. 353-92.000.
Palmer, Richard C., to RCA Corporation. Video disc player noise reduction circuit. 4,309,722, Cl. 358-128.500.
Panametrics, Inc.: *See*—
Pedersen, Norman E.; Bradshaw, James E.; Matson, James E.; and Lynnworth, Lawrence C., 4,308,754, Cl. 73-861.280.
Panick, Karl; and Glass, Joseph, to Webasto-Werk W. Baier GmbH & Co. Electromagnetic fuel delivery and metering pump. 4,309,153, Cl. 417-252.000.
Pant, Aniket: *See*—
Robinson, James E.; Pant, Aniket; and Legg, Roger C., 4,308,756, Cl. 73-863.850.
Paparizos, Christos: *See*—
Shaw, Wilfrid G.; Paparizos, Christos; and Velenyi, Louis J., 4,309,392, Cl. 423-239.000.
Papathomas, Thomas V.: *See*—
Boros, Victor B.; Giacopelli, James N.; and Papathomas, Thomas V., 4,309,650, Cl. 323-283.000.
Pappas, Peter R. Security enclosure for handguns. 4,309,065, Cl. 312-319.000.
Papuchon, Michel: *See*—
Di Forte, Marie A.; Papuchon, Michel; and Puech, Claude, 4,309,667, Cl. 331-94.50H.
Parbhoo, Kantilal R., to Owens-Corning Fiberglas Corporation. Method and apparatus for forming and packaging multistrand roving. 4,309,202, Cl. 65-3.100.
Parker, Charles L., Jr.; and Vaughn, George A., to AMF Incorporated. Clamping apparatus. 4,309,033, Cl. 273-73.00D.
Parker, Frank W. Ice cream dispenser. 4,309,162, Cl. 425-126.00S.
Parker-Hannifin Corporation: *See*—
Greco, John R., 4,308,895, Cl. 138-125.000.
Parquet, Donald J., and King, Donald R., to J. I. Case Company. Priority flow divider. 4,308,787, Cl. 91-6.000.
Parrilli, Gerard A. Tuck box with header card. 4,308,986, Cl. 229-33.000.
Parthasarathy, R.; and Hort, Eugene V., to GAF Corporation. Catalytic oxidative dehydrogenation of alkenes or alkadienes to furan compounds. 4,309,355, Cl. 260-346.110.
Parthasarathy, R.; and Hort, Eugene V., to GAF Corporation. Oxidative dehydrogenation of alkenes or alkadienes to furan compounds. 4,309,356, Cl. 260-346.110.
Passmore, Paul R.; and Poggiagliomi, Elio, to Refraction Technology, Inc.; and Geoquest International Ltd. Digital sonobuoy. 4,309,763, Cl. 367-3.000.
Pat-Air, Inc.: *See*—
Gallaher, Patrick J., Sr., 4,309,285, Cl. 210-123.000.
Pathak, Ram D.; and Treherne, Elezabeth J., to Beecham Group Limited. Effervescent powders. 4,309,408, Cl. 424-44.000.
Patrick, E. Vincent; Dickson, Howard K.; and Dunmire, Howard L., to United States of America, Army. Method and apparatus to fabricate image intensifier tubes. 4,309,066, Cl. 316-19.000.
Patten, Raymond A.: *See*—
Blodgett, Jerry A.; and Patten, Raymond A., 4,309,109, Cl. 356-355.000.
Patterson, John A., to Texaco Inc. Novel process. 4,309,363, Cl. 260-513.00R.
Paulat, Volker: *See*—
Koll, Jochen; Paulat, Volker; Hornle, Reinhold; Molls, Hans-Heinz; and Nonn, Konrad, 4,309,182, Cl. 8-527.000.
Koll, Jochen; Paulat, Volker; Hornle, Reinhold; Molls, Hans-Heinz; and Nonn, Konrad, 4,309,183, Cl. 8-527.000.
Paulsky, Alexandr V.: *See*—
Lisitsa, Evgeny I.; Gursky, Alexandr M.; Kuimov, Vitaly G.; Makazan, Jury S.; Paulsky, Alexandr V.; Reznichenko, Fedor A.; Romanov, Alexandr V.; and Uzorovsky, Efim L., 4,308,745, Cl. 72-453.180.
Paulucci, Jeno F., to Jeno's, Inc. Container assembly. 4,308,952, Cl. 206-216.000.
Pautler, James A.: *See*—
Kloker, Kevin L.; and Pautler, James A., 4,309,772, Cl. 375-76.000.
Payne, Barrett M. M. Peristaltic motors. 4,309,150, Cl. 417-229.000.
Pearson, Stephen J.: *See*—
Martin, Jerry D.; Pearson, Stephen J.; Ward, Gary A.; and Winchell, David A., 4,308,904, Cl. 150-0.500.
Pedersen, Norman E.; Bradshaw, James E.; Matson, James E.; and Lynnworth, Lawrence C., to Panametrics, Inc. Ultrasonic flowmeter. 4,308,754, Cl. 73-861.280.
Peelen, Jan G. J.: *See*—
Klop, Marius A. F.; Meerman, Wilhelmus C. P. M.; Peelen, Jan G. J.; and Tuin, Hermanus N., 4,309,201, Cl. 65-2.000.
Peinetti, Donald L.; and Rippelmeyer, Dennis M., to Emerson Electric Co. Programmable electronic thermostat. 4,308,991, Cl. 236-46.00R.
Pellenard, Philippe: *See*—
Graber, Gerard; Chatenet, Bernard; and Pellenard, Philippe, 4,309,213, Cl. 71-120.000.
Pendry, Warren W.; and Seyerle, Carl E., to Outboard Marine Corporation. Discharge vane arrangement for snow thrower. 4,308,675, Cl. 37-43.00D.
Pennwalt Corporation: *See*—
Vidal, Frederick D.; and Jayaraman, Anantharaman, 4,309,451, Cl. 426-331.000.

Perez, Arthur; and Abraham, Fayez F., to Tyler Refrigeration Corporation. Open top refrigerated display case with storage section. 4,308,726, Cl. 62-256.000.
Perhats, Francis J., to Autotherm, Inc. Energy saving circulating system for vehicle heaters. 4,308,994, Cl. 237-12.30B.
Perkin-Elmer Corporation, The: *See—*
Gonner, Winfried; and Huber, Bernhard, 4,309,156, Cl. 417-403.000.
Siebert, Edward T., 4,309,108, Cl. 356-352.000.
Perricone, Alphonse C.: *See—*
Lucas, James M.; Perricone, Alphonse C.; and Enright, Dorothy P., 4,309,329, Cl. 260-29.6TA.
Perry, Charles B.; Bomkamp, Raymond L.; and Bone, Kendall F., to Cincinnati Milacron Inc. Machine tool. 4,309,600, Cl. 235-375.000.
Persinger, James G. Method and apparatus for improving efficiency in combustion engines. 4,308,844, Cl. 123-539.000.
Peter Bayly Associates Australia Pty. Ltd.: *See—*
Bayly, Peter K.; and Oretti, John E., 4,308,978, Cl. 222-449.000.
Peters, Arthur: *See—*
Negi, Virendra S.; and Peters, Arthur, 4,309,753, Cl. 364-200.000.
Peterson, Anders A.; and Cummiskey, William J., to Hardinge Brothers, Inc. Machine tool collet. 4,309,041, Cl. 279-1.0ME.
Peterson, Francis C., to Illinois Tool Works Inc. State of charge battery monitor. 4,308,817, Cl. 116-215.000.
Petitpierre, Jean C., to Ciba-Geigy Corporation. Pressure-sensitive or heat-sensitive recording material. 4,309,047, Cl. 282-27.500.
Petraitis, Del J.: *See—*
Compton, Richard A.; and Petraitis, Del J., 4,309,557, Cl. 556-453.000.
Petrich, Dennis M.: *See—*
Norberg, Gayle R.; and Petrich, Dennis M., 4,309,673, Cl. 332-16.00R.
Petro, John, to Westinghouse Electric Corp. Machine parts protecting system. 4,309,169, Cl. 432-64.000.
Petrolite Corporation: *See—*
Quinlan, Patrick M., 4,309,383, Cl. 422-12.000.
Peynaud, Francois: *See—*
Clavelloux, Noel; and Peynaud, Francois, 4,308,749, Cl. 73-170.00A.
Pezzoli, Paul A., to Dow Chemical Company, The. Asbestos treatment with metal sulfides. 4,309,477, Cl. 428-378.000.
Pfaff, Deems M. Machine for separating concrete from steel. 4,309,126, Cl. 404-90.000.
Pfaff, Georg; and Schmied, Helmut, to Robert Bosch GmbH. Ignition system for an internal combustion engine. 4,308,848, Cl. 123-618.000.
Pfizer Inc.: *See—*
Bigham, Eric C., 4,309,347, Cl. 260-245.20R.
Hoyt, Hazen L., 4th, 4,309,222, Cl. 106-288.00B.
Johnson, Michael R., 4,309,545, Cl. 546-108.000.
Lombardino, Joseph G., 4,309,427, Cl. 424-246.000.
Philip Morris Incorporated: *See—*
Gillespie, Andrew J.; and Dingus, George, 4,308,776, Cl. 83-344.000.
Phillips Petroleum Company: *See—*
Billings, William G.; and Scinta, James, 4,309,397, Cl. 423-415.00A.
Carter, Cecil O., 4,309,387, Cl. 422-201.000.
Holmes, Richard R., 4,309,487, Cl. 428-516.000.
Johnson, Marvin M.; Tabler, Donald C.; and Nowack, Gerhard P., 4,309,311, Cl. 252-438.000.
Murray, Lawrence K., 4,309,400, Cl. 423-450.000.
Udipi, Kishore, 4,309,517, Cl. 525-374.000.
Washer, Stone P., 4,309,273, Cl. 208-78.000.
Phy, Charles L.: *See—*
Williams, Donald F.; and Phy, Charles L., 4,308,709, Cl. 53-207.000.
Picquendar, Jean-Edgar, to Thomson-CSF. Sampling filter. 4,309,678, Cl. 333-165.000.
Pierrat, Michel A., to Ferrofluidics Corporation. Linear seal apparatus. 4,309,040, Cl. 277-80.000.
Pietersen, Anthonius H.: *See—*
Lecuyer, Daniel; and Pietersen, Anthonius H., 4,309,698, Cl. 340-590.000.
Pietsch, Stephen J.: *See—*
Harper, Jon J.; and Pietsch, Stephen J., 4,309,390, Cl. 423-150.000.
Piloni, Taddeo; and Valente, Paolo. Automatic coffee machines. 4,308,789, Cl. 99-289.00R.
Pinto, Alwyn, to Imperial Chemical Industries Limited. Energy process in methanol synthesis. 4,309,359, Cl. 518-705.000.
Pioneer Electronic Corporation: *See—*
Takizawa, Yoshiyuki; Itoh, Norihiko; Kashiwazaki, Takashi; Takano, Tomomitsu; and Kobayashi, Junji, 4,309,728, Cl. 360-71.000.
Pirsh, Edward A., to Babcock & Wilcox Company, The. Filter house having catalytic filter bags for simultaneously removing NO_x and particulate matter from a gas stream. 4,309,386, Cl. 422-177.000.
Pitney Bowes Inc.: *See—*
Tolmie, Robert J., Jr., 4,309,737, Cl. 361-225.000.
Pittsburgh-Des Moines Corporation: *See—*
Vater, Richard A.; and Terlesky, John, 4,308,967, Cl. 220-71.000.
Pizzuto, Joseph. Blank deflector. 4,308,743, Cl. 72-345.000.
Plapper, Jurgen: *See—*
Friese, Hans-Herbert; Plapper, Jurgen; Ploog, Uwe; and Ruscheinsky, Emil, 4,309,176, Cl. 8-94.230.
Plastic Molders Supply Co., Inc.: *See—*
Pollard, Edward T., 4,309,374, Cl. 264-115.000.
Ploog, Uwe: *See—*
Friese, Hans-Herbert; Plapper, Jurgen; Ploog, Uwe; and Ruscheinsky, Emil, 4,309,176, Cl. 8-94.230.
Plumettaz, Gerard; and Kupfer, Joe, to Plumettaz S.A.; and Gebr. Kupfer. Suspension apparatus for a scaffold. 4,309,023, Cl. 254-273.000.
Plumettaz S.A.: *See—*
Plumettaz, Gerard; and Kupfer, Joe, 4,309,023, Cl. 254-273.000.
Pneumo Corporation: *See—*
Brandstadter, Jack M., 4,308,720, Cl. 60-595.000.
Poeschel, Eva: *See—*
Heide, Helmut; Poeschel, Eva; and Roth, Ulrich, 4,309,488, Cl. 428-547.000.
Poggiagliomi, Elio: *See—*
Passmore, Paul R.; and Poggiagliomi, Elio, 4,309,763, Cl. 367-3.000.
Polaroid Corporation: *See—*
Bendoni, Leonard V.; and Wareham, Richard R., 4,309,100, Cl. 354-303.000.
Shenk, Edwin K., 4,309,098, Cl. 354-195.000.
Pollard, Edward T., to Plastic Molders Supply Co., Inc. Method of coloring and molding a shaped thermoplastic resin article. 4,309,374, Cl. 264-115.000.
Pollok, Hans-Jurgen, to Siemens Aktiengesellschaft. Insulation caps for stator winding head connections of an electric machine. 4,309,636, Cl. 310-260.000.
Polster, Walter: *See—*
Brunn, Klaus; Matura, Eike; Polster, Walter; and Schmitmann, Herbert, 4,309,613, Cl. 250-409.000.
Porner, Horst: *See—*
Krauss, Peter; Muller, Ewald; Porner, Horst; and Weber, Robert, 4,309,583, Cl. 219-7.500.
Porta Systems Corp.: *See—*
Ahuja, Om P., 4,309,578, Cl. 179-175.20B.
Posso, Patrick, to Gefitec S.A. Tripod with adjustable support surface for supporting various objects. 4,309,010, Cl. 248-168.000.
Post Office, The: *See—*
Malyon, Derek J., 4,309,671, Cl. 331-94.50S.
Poulos, Andrew C.: *See—*
Smith, Eugene L., Jr.; Poulos, Andrew C.; and Ellwanger, Richard E., 4,309,282, Cl. 209-166.000.
Poutanen, Matti J.; and Heino, Aarne, to Oy Nokia AB. Apparatus for forming foam-skin insulation on telephone wires. 4,309,160, Cl. 425-113.000.
Powell, James R.: *See—*
Steinberg, Meyer; Powell, James R.; Takahashi, Hiroshi; Grand, Pierre; and Kouts, Herbert, 4,309,249, Cl. 376-192.000.
Power-Flame, Inc.: *See—*
McReynolds, Billy L.; and Barnett, Richard L., 4,308,972, Cl. 220-335.000.
PPG Industries, Inc.: *See—*
Carson, Dennis W.; Gray, Ralph C.; and Luckock, Glenn W., 4,309,328, Cl. 260-29.60F.
Ernsberger, Fred M., 4,309,495, Cl. 430-5.000.
Presto Lock Company, Division of Walter Kidde & Company, Inc.: *See—*
Remington, Richard C., 4,308,731, Cl. 70-74.000.
Pretini, Gisberto. Protective door systems. 4,308,803, Cl. 109-3.000.
Price, Charles E.: *See—*
Ray, George C., III; Otto, Michael J.; and Price, Charles E., 4,308,679, Cl. 40-312.000.
Prill, Fredric W.; and Binz, Lee V., to Barber-Greene Company. System for combining multiple fuels to produce controllable gas temperatures in asphalt drum mixers. 4,309,168, Cl. 432-24.000.
Primas, Willi: *See—*
Huber, Peter; August, Peter; Lampelzammer, Helga; and Primas, Willi, 4,309,478, Cl. 428-391.000.
Prinz, Reinhard; and Felle, Karl, to Carl Zeiss-Stiftung. Aircraft velocity-altitude measuring means. 4,309,104, Cl. 356-28.000.
Probst, Manfred: *See—*
Lautenschlager, Hans-Heiner; Betzing, Hans; Winkelmann, Johannes; and Probst, Manfred, 4,309,407, Cl. 424-275.000.
Probst, Wolfgang, to Seitz-Werke GmbH, a part interest. Low-noise speed reduction for a one-track bottle flow, especially for bottling plants. 4,308,944, Cl. 198-442.000.
Probstein, Ronald F.; and Delichatsios, Michael A., to Massachusetts Institute of Technology. Method of and apparatus for continuous flow flocculation and clarification. 4,309,291, Cl. 210-713.000.
Procter & Gamble Company, The: *See—*
Kitko, David J., 4,308,625, Cl. 4-228.000.
Produits Chimiques Ugine Kuhlmann: *See—*
Rau, Manfred C., 4,309,181, Cl. 8-636.000.
Prokai, Bela: *See—*
Baskent, Feyyaz O.; and Prokai, Bela, 4,309,508, Cl. 521-112.000.
Proksa, Ferdinand: *See—*
Althausen, Ferdinand; Proksa, Ferdinand; and Osinski, Ulrich, 4,309,373, Cl. 264-51.000.
Provost, John G., to Container Corporation of America. Paperboard display stand. 4,308,948, Cl. 206-45.250.
Prunier, Jean-Claude, to Souriau & Cie (SA). Connector for optical fibers and device for mounting fibers on tips directly usable on connectors. 4,309,071, Cl. 350-96.210.
Prusak, John J., to RCA Corporation. Cathode mask knob. 4,309,265, Cl. 204-279.000.
Pudark, Arthur A.; Niesen, George P.; Bach, Frederick O.; and Shukla, Mahendra B., to A. B. Dick Company. Original document handler. 4,309,102, Cl. 355-14.0SH.

Puech, Claude: *See*—
Di Forte, Marie A.; Papuchon, Michel; and Puech, Claude, 4,309,667, Cl. 331-94.50H.
Purdue Frederick Company, The: *See*—
Cohen, Sasson; and Fisher, Abraham, 4,309,544, Cl. 546-94.000.
Pusch, Gunter; and Hoffmann, Alexander. Tents for military use and providing protection against modern sight and IR-optical search methods. 4,308,882, Cl. 135-1.00R.
Quadranti, Marco; and Gerber, Hans-Rudolf, to Ciba-Geigy Corporation. Preemergence method of selectively controlling weeds in crops of cereals and composition therefor. 4,309,210, Cl. 71-93.000.
Querou, Yvon, to Rhone-Poulenc Agrochimie. Benzoxazolone preparation. 4,309,549, Cl. 548-221.000.
Querou, Yvon, to Rhone-Poulenc Agrochimie. Benzoxazolone preparation. 4,309,550, Cl. 548-221.000.
Quinlan, Patrick M., to Petrolite Corporation. Di-quaternary ammonium salts of α-1,4-thiazine alkanephosphonic acids as corrosion inhibitors. 4,309,383, Cl. 422-12.000.
Rabe, Erich, to Siegas-Metallwarenfabrik Wilhelm Loh GmbH & Co. KG. Control circuit for providing a synchronized drive signal to an oscillating system. 4,309,675, Cl. 331-172.000.
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Thompson, Chester C., 4,309,747, Cl. 363-61.000.
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Raidel, John E. Air spring suspension system with parallelogram stabilized axle and anti-roll control. 4,309,045, Cl. 280-711.000.
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Moore, Raymond J., 4,309,123, Cl. 403-408.000.
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Simon, Frank J.; and Slater, Wilfred B., 4,309,185, Cl. 23-230.00R.
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Mueller, Helmut; von Ow, Hans P.; Rambold, Thomas; and Werres, Bernhard, 4,309,765, Cl. 370-99.000.
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RCA Corporation: *See*—
Cardinal, Rene E., 4,309,717, Cl. 357-74.000.
Christopher, Todd J., 4,309,721, Cl. 358-128.500.
Groeneweg, Willem H., 4,309,725, Cl. 358-242.000.
Hinn, Werner, 4,309,719, Cl. 358-21.00R.
Lock, Brian E., 4,309,456, Cl. 427-209.000.
Palmer, Richard C., 4,309,722, Cl. 358-128.500.
Prusak, John J., 4,309,265, Cl. 204-279.000.
Reach, Roy W.; Kahn, William M.; and Shapiro, David, to Hewlett-Packard Company. Calculator for evaluating numerical answers to problems. 4,309,761, Cl. 364-900.000.
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Passmore, Paul R.; and Poggiagliomi, Elio, 4,309,763, Cl. 367-3.000.
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Reinicke, Robert H.; and Waller, Henry A., to Consolidated Controls Corporation. Poppet valve actuator apparatus. 4,309,022, Cl. 251-61.400.
Reiss, John R., to American Standard Inc. Clamp-down device for use in securing a member in an inaccessible area. 4,309,018, Cl. 248-503.000.
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Arnoux, Daniel; Genter, Claude; Aguettaz, Jean; Berthelot, Alain; and Michel, Bernard, 4,309,682, Cl. 335-128.000.
Reliance Electric Company: *See*—
Martin, Hubert; and Beene, Gerald W., 4,309,676, Cl. 333-14.000.
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Floyd, Glenn L.; and McElwain, James A., 4,308,920, Cl. 172-328.000.
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Hartry, Donald R., 4,308,782, Cl. 84-414.000.
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Wagner, Rudolf, 4,308,768, Cl. 81-60.000.
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Gratzek, John B.; Goven, Beverly A.; and Dawe, Donald L., 4,309,416, Cl. 424-88.000.
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Watson, Herman L.; Sackner, Marvin A.; and Stott, Frank D., 4,308,872, Cl. 128-725.000.
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Revane, Thomas L. Tree well cover. 4,308,688, Cl. 47-25.000.
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Jenks, Richard H., 4,308,656, Cl. 29-527.700.
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Behm, William C., 4,308,677, Cl. 37-126.0AE.
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Graber, Gerard; Chatenet, Bernard; and Pellenard, Philippe, 4,309,213, Cl. 71-120.000.
Querou, Yvon, 4,309,549, Cl. 548-221.000.
Querou, Yvon, 4,309,550, Cl. 548-221.000.
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Kyritsos, Joseph; and Sacco, Jean, 4,309,531, Cl. 528-339.000.
Ricci, Louis N.: *See*—
Wafer, John A.; Ricci, Louis N.; and Maier, Alfred E., 4,309,580, Cl. 200-144.00R.
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Sarma, Kalluri R.; and Rice, M. John, Jr., 4,309,259, Cl. 204-164.000.
Richardson, George S. Integrated bridge construction. 4,309,125, Cl. 14-73.000.
Richardson-Merrell Inc.: *See*—
Jones, Winton D., Jr.; and Miller, Francis P., 4,309,426, Cl. 424-246.000.
Richman, David W., to McDonnell Douglas Corporation. System for hydrodynamic compensation for electrophoresis crescent distortion. 4,309,268, Cl. 204-301.000.
Richter, Dietrich: *See*—
Heeren, Hermann; and Richter, Dietrich, 4,308,913, Cl. 165-68.000.
Richter, Gerhard: *See*—
Girodi, Erich; Richter, Gerhard; Neumann, Berthold; Jaschke, Peter; Slabik, Johannes; Weber, Roland; Schmidt, Andrea; Krieg, Peter; Groschel, Lutz; Heynisch, Joachim; Starke, Joachim; Wienold, Dietrich; Scholz, Gunter; and Monch, Eckehard, 4,309,193, Cl. 48-66.000.
Ricoh Company, Ltd.: *See*—
Matsumoto, Fuyuhiko; and Karasawa, Shuichi, 4,308,821, Cl. 118-645.000.
Riegel Textile Corporation: *See*—
Teed, Richard K., 4,309,236, Cl. 156-164.000.
Riegel, Ulrich: *See*—
Engelhardt, Friedrich; Riegel, Ulrich; Hille, Martin; and Wittkus, Heinz, 4,309,523, Cl. 526-240.000.
Rieter Machine Works, Ltd.: *See*—
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Staehli, Gustav, 4,308,715, Cl. 57-119.000.

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Tworek, John L.; and Rignel, Gordon R., 4,309,203, Cl. 65-4.100.
Tworek, John L.; and Rignel, Gordon R., 4,309,244, Cl. 162-102.000.
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Riley, Robert H., Jr., to Black & Decker Inc. Mechanical and electrical connection interface for a battery containing pack. 4,309,067, Cl. 339-91.00R.

Rippelmeyer, Dennis M.: *See*—
Peinetti, Donald L.; and Rippelmeyer, Dennis M., 4,308,991, Cl. 236-46.00R.

Rist, Bruno A.; England, Michael D. D.; and Cousineau, Les R., to 501 Vendacopy, Inc. Logic for coin operated office copy machine vender. 4,308,941, Cl. 194-1.00C.

Ritzmann, Gotz: *See*—
Ghyczy, Miklos; Ritzmann, Gotz; Erdos, Adorjan; and Etschenberg, Eugen, 4,309,420, Cl. 424-199.000.
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Rival Manufacturing Company: *See*—
Jones, Darrell B.; and Kircher, William B., 4,309,593, Cl. 219-347.000.

Rivola, Giovanni: *See*—
Cassinelli, Giuseppe; Grein, Arpad; Merli, Sergio; and Rivola, Giovanni, 4,309,503, Cl. 435-78.000.

Robert Bosch GmbH: *See*—
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Grabow, Kurt; Mahl, Willy; Muller, Karl-Heinz; Kochendorfer, Heinrich; Bertsch, Dieter; Mayer, Siegfried; Anhenn, Jorg; and Dworak, Wilhelm, 4,309,158, Cl. 418-132.000.
Leiber, Heinz; Braschel, Volker; Jonner, Wolf-Dieter; and Wupper, Hans-Herbert, 4,309,060, Cl. 303-106.000.
Pfaff, Georg; and Schmied, Helmut, 4,308,848, Cl. 123-618.000.

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Hynecek, Jaroslav; and Roberts, Charles G., 4,309,624, Cl. 307-221.00D.

Roberts, John T., to UOP Inc. N,N'-Disubstituted 2,4'-diaminodiphenyl ethers as antioxidants. 4,309,294, Cl. 252-51.50R.

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Halsall, James R.; Larcombe, Michael H.; Robertson, James R.; and Rogers, Mark A., 4,309,758, Cl. 364-424.000.

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Robinson, Paul R.; and Bamberger, Carlos E., to United States of America, Energy. Thermochemical generation of hydrogen and oxygen from water. 4,309,403, Cl. 423-648.00R.

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Michaud, Horst; Rock, Heinrich; and Seeholzer, Josef, 4,309,206, Cl. 71-28.000.

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Lawson, Peter, 4,308,777, Cl. 83-477.200.

Rockwell International Corporation: *See*—
Davis, James M., Jr., 4,309,598, Cl. 235-92.0MP.

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Roe, Stephen E. Fuel injection system for internal combustion engines. 4,308,827, Cl. 123-541.000.

Rogers, Mark A.: *See*—
Halsall, James R.; Larcombe, Michael H.; Robertson, James R.; and Rogers, Mark A., 4,309,758, Cl. 364-424.000.

Rohowetz, Stanley E.: *See*—
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Rolf, Meinhard: *See*—
Neeff, Rutger; Rolf, Meinhard; and Muller, Walter, 4,309,221, Cl. 106-164.000.

Rollei-Werke Franke & Heidecke: *See*—
Sobotta, Reinhard, 4,308,759, Cl. 74-384.000.

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Lisitsa, Evgeny I.; Gursky, Alexandr M.; Kuimov, Vitaly G.; Makazan, Jury S.; Paulsky, Alexandr V.; Reznichenko, Fedor A.; Romanov, Alexandr V.; and Uzorovsky, Efim L., 4,308,745, Cl. 72-453.180.

Romark Technologies, Inc.: *See*—
Schroeder, Robert W., 4,308,696, Cl. 52-11.000.

Rome Industries, Inc.: *See*—
Coughran, Samuel J., Jr., 4,308,919, Cl. 172-240.000.

Romeo, Joseph: *See*—
Rapisarda, Anthony A.; and Romeo, Joseph, 4,309,299, Cl. 252-95.000.

Romig, Byron A., Jr. Fiberglass structural member of layer construction and method of making same. 4,308,700, Cl. 52-225.000.

Roos, Friedrich; Bolz, Johannes; and Grebe, Ingo, to Babcock-BSH Aktiengesellschaft. Continuously operating multistage drying installation and a process for continuously drying a workpiece. 4,308,667, Cl. 34-23.000.

Roos, Martin; Eykamp, William; and Cooper, William W., IV, to Abcor, Inc. Reverse-osmosis tubular membrane. 4,309,287, Cl. 210-247.000.

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Schonberger, Norbert; Schinzel, Erich; Martini, Thomas; and Rosch, Gunter, 4,309,551, Cl. 548-324.000.

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Eubanks, Jerry D.; and Rose, Charles F., 4,308,939, Cl. 190-41.00R.

Roseman, Theodore J.; Carpenter, Osmer S.; Baker, Richard W.; and Ayres, James W. Two-member medicated device for rate-controlled administration of lipophilic pharmaceuticals. 4,308,867, Cl. 128-260.000.

Rosinski, Edward J.; and Schwartz, Albert B., to Mobil Oil Corporation. Promotion of cracking catalyst octane yield performance. 4,309,280, Cl. 208-120.000.

Roth, Donald P. Electrical plug locking device. 4,308,730, Cl. 70-53.000.

Roth, Ulrich: *See*—
Heide, Helmut; Poeschel, Eva; and Roth, Ulrich, 4,309,488, Cl. 428-547.000.

Rothchild, Ronald D., to Airco, Inc. Methods and apparatus for expanding tobacco. 4,308,876, Cl. 131-293.000.

Rothman, Bengt: *See*—
Borgstrom, Gunnar; and Rothman, Bengt, 4,309,231, Cl. 156-54.000.

Rotolico, Anthony J., to Eutectic Corporation. Adjustable head for selectively shaping a flame-spray discharge. 4,308,996, Cl. 239-290.000.

Rotter, Franz, to Energy Recovery Research Group, Inc. Apparatus for gasifying solid fuels and wastes. 4,309,195, Cl. 48-76.000.

Rouwhorst, Dale L.; and Jillson, Ronald L., to BASF Wyandotte Corporation. Flushing process for pigments. 4,309,223, Cl. 106-309.000.

Rubin, Jacob N.: *See*—
Dahlstrom, Rodney A.; and Rubin, Jacob N., 4,309,254, Cl. 203-47.000.

Ruhe, Anthony; and Nlckerson, James H. D. Double plate flow distributor. 4,308,914, Cl. 165-160.000.

Ruizzo, Gladio, Jr. Combustion device for IC engine. 4,308,847, Cl. 123-573.000.

Rumble, Roy W., deceased; and by Rumble, Zilla K., executrix. Door frame kit. 4,308,692, Cl. 49-504.000.

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Rumble, Roy W., deceased; and Rumble, Zilla K., executrix, 4,308,692, Cl. 49-504.000.

Rundquist, Per S. R.: *See*—
Bjorkman, Simon J.; Jonsson, Georg S.; and Rundquist, Per S. R., 4,309,606, Cl. 250-252.000.

Ruscheinsky, Emil: *See*—
Friese, Hans-Herbert; Plapper, Jurgen; Ploog, Uwe; and Ruscheinsky, Emil, 4,309,176, Cl. 8-94.230.

Rushworth, Paul M., to Martin Marietta Corporation. Laser seeker target simulator. 4,309,746, Cl. 362-259.000.

Russell, John D. Carbon strain gage. 4,309,686, Cl. 338-2.000.

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Lowe, Jerome R.; and Russo, Frank P., 4,308,736, Cl. 72-36.000.

Ryan, Douglas G.; and Watridge, Derek J., to Exxon Research & Engineering Co. Rotary drum filter. 4,309,288, Cl. 210-39.00S.

Ryan, John O.; Corkery, Joseph L.; Sudyka, Edward P.; Brill, Gerow D.; Reagan, Anne M.; and Holzgrafe, James R., to Ampex Corporation. Apparatus and method for registration and shading of color television cameras. 4,309,723, Cl. 358-163.000.

S-W-H, Ltd.: *See*—
Satterwhite, William L., 4,308,796, Cl. 101-143.000.

Sacco, Jean: *See*—
Kyritsos, Joseph; and Sacco, Jean, 4,309,531, Cl. 528-339.000.

Sachs, Peter R., to GAF Corporation. Dual gloss coating and process therefor. 4,309,452, Cl. 427-44.000.

Sack, Wieland; Anthonsen, Reiner; and Kertesz, Ferencz, to Felix Schoeller Jr. GmbH & Co. KG. Electrostatic recording material. 4,309,486, Cl. 428-511.000.

Sackner, Marvin A.: *See*—
Watson, Herman L.; Sackner, Marvin A.; and Stott, Frank D., 4,308,872, Cl. 128-725.000.

Sadoski, Tadius T.: *See*—
Hernandez, Rafael J.; Yong, Thomas S.; and Sadoski, Tadius T., 4,308,650, Cl. 29-25.130.

Saegusa, Takashi: *See*—
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Saft-Societe des Accumulateurs Fixes et de Traction: *See*—
Bernard, Olivier, 4,309,492, Cl. 429-161.000.

Sagami Chemical Research Center: *See*—
Kubo, Masashige; Nonaka, Yuji; and Kihara, Keiichi, 4,309,341, Cl. 260-112.50R.

Sage, Donald B.; and Krautz, Fred G., to Owens-Corning Fiberglas Corporation. Glass size compositions and glass fibers coated therewith. 4,309,326, Cl. 260-29.6NR.

St. Aubin, George R., to Monarch Marking Systems, Inc. Composite label web. 4,309,468, Cl. 428-42.000.

St. Leger Searle, Simon M., to Smiths Industries Limited. Display apparatus. 4,309,070, Cl. 350-3.700.

Saito, Isao: *See*—
Nomoto, Seiichiro; Ikuta, Hironori; Machida, Yoshimasa; Negi, Shigeto; Sugiyama, Isao; Yamauchi, Hiroshi; Nakatsuka, Kenro; and Saito, Isao, 4,309,354, Cl. 260-345.200.

Saito, Masaaki, to Nissan Motor Co., Ltd. Electromagnetic valve for fluid flow control. 4,308,890, Cl. 137-495.000.

Saitou, Sinichi; Kato, Toshikazu; Watanabe, Seizo; Nishiyama, Toyoo; Shimoda, Misao; Shibata, Tutomu; Kimura, Kenji; and Satoh, Ken, to Olympus Optical Co., Ltd. Mechanism for preventing loosening of magnetic recording tape of tape cassette. 4,309,002, Cl. 242-198.000.

Sakashita, Nobuyuki: *See—*
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Sakata, Futao: *See—*
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Sako, Eiji: *See—*
Ueda, Yasuo; Kagitani, Yoshio; Sako, Eiji; Suyama, Tadakazu; Komatsu, Nobuhiko; and Satoh, Daisuke, 4,309,437, Cl. 424-274.000.

Sakurado, Kenichi: *See—*
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Salame, Edward J. Swivel construction. 4,309,121, Cl. 403-164.000.

Salerno, Giuseppe: *See—*
Chiusoli, Gian P.; Giroldini, William; and Salerno, Giuseppe, 4,309,357, Cl. 260-413.000.

Salvador, Louis A.; Andermann, Ronald E.; and Rath, Lawrence K., to United States of America, Energy. Particle withdrawal from fluidized bed systems. 4,309,194, Cl. 48-76.000.

Salzmann, Thomas N.: *See—*
Christensen, Burton G.; Ratcliffe, Ronald W.; and Salzmann, Thomas N., 4,309,346, Cl. 260-239.00A.

Sampson, Edward F.: *See—*
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Sampson, Norman N. Heat scaling of traveling articles. 4,309,609, Cl. 250-341.000.

Samsonite Corporation: *See—*
Eubanks, Jerry D.; and Rose, Charles F., 4,308,939, Cl. 190-41.00R.

Samsonov, Vladimir I.: *See—*
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Samuel, Glyndwr T., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Breech mechanisms. 4,308,785, Cl. 89-4.00B.

Sanami, Yoshitomo: *See—*
Hiroya, Osamu; Ihara, Hiroyuki; and Sanami, Yoshitomo, 4,309,191, Cl. 44-51.000.

Sandberg, Harry W., to Du Pont de Nemours, E. I., and Company. Process and apparatus for packaging. 4,308,710, Cl. 53-433.000.

Sanders, Estelle W.; and Goffney, Lawrence J., Jr. Scalp massaging implement. 4,308,860, Cl. 128-62.00R.

Sanders, Nicholas A.; and Dinulescu, Horia A. Thin sheet heat exchanger. 4,308,915, Cl. 165-166.000.

Sanderson, Hendrik J., to U.S. Philips Corporation. Method of reading and/or writing information and apparatus for carrying out the method. 4,309,730, Cl. 360-77.000.

Sandhu, Mohammad A.: *See—*
Lelental, Mark; and Sandhu, Mohammad A., 4,309,497, Cl. 430-48.000.

Sandstrom, Ake J.: *See—*
Thurner, Heinz F.; Sandstrom, Ake J.; and Svensson, Christer N., 4,308,751, Cl. 73-627.000.

Sanyo Electric Co., Ltd.: *See—*
Nishimura, Itsuro; and Takahashi, Yoshimasa, 4,309,073, Cl. 350-128.000.

Sarantakis, Dimitrios, to American Home Products Corporation. Polypeptide compositions. 4,309,340, Cl. 260-112.50R.

Sarma, Kalluri R.; and Rice, M. John, Jr., to Motorola, Inc. High pressure plasma hydrogenation of silicon tetrachloride. 4,309,259, Cl. 204-164.000.

Sarto, Jorma O., to Chrysler Corporation. Early fuel evaporation with bypass. 4,308,845, Cl. 123-549.000.

Sato, Akihiro; Kikuta, Kazutsune; Matsuda, Kenji; Uwai, Toshihiro; and Hanari, Tohru, to Chisso Corporation. Process for producing α-olefin polymers. 4,309,521, Cl. 526-114.000.

Sato, Atsushi; Murai, Yoshikazu; and Mita, Nobuaki, to Nippon Petrochemicals Company, Ltd. Heat storage material. 4,309,297, Cl. 252-70.000.

Sato, Fumiaki: *See—*
Ito, Yoshifumi; Nishimoto, Yoshihiko; Taoda, Kiyomichi; Sato, Fumiaki; Ueda, Takashi; and Uehara, Seibi, 4,308,668, Cl. 34-30.000.

Sato, Hidenori: *See—*
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Sato, Ryuichi: *See—*
Ishikawa, Akira; Ishida, Yukihito; Ikegami, Shiro; Satoh, Hiroshi; Sato, Ryuichi; Tomisawa, Setuso; and Toyoshima, Shigeru, 4,309,412, Cl. 424-78.000.

Satoh, Daisuke: *See—*
Ueda, Yasuo; Kagitani, Yoshio; Sako, Eiji; Suyama, Tadakazu; Komatsu, Nobuhiko; and Satoh, Daisuke, 4,309,437, Cl. 424-274.000.

Satoh, Hiroshi: *See—*
Ishikawa, Akira; Ishida, Yukihito; Ikegami, Shiro; Satoh, Hiroshi; Sato, Ryuichi; Tomisawa, Setuso; and Toyoshima, Shigeru, 4,309,412, Cl. 424-78.000.

Satoh, Ken: *See—*
Saitou, Sinichi; Kato, Toshikazu; Watanabe, Seizo; Nishiyama, Toyoo; Shimoda, Misao; Shibata, Tutomu; Kimura, Kenji; and Satoh, Ken, 4,309,002, Cl. 242-198.000.

Satterwhite, William L., to S-W-H, Ltd. Offset lithographic press with ink metering system for blanket cylinder. 4,308,796, Cl. 101-143.000.

Satzinger, Gerhard: *See—*
Hartenstein, Johannes; and Satzinger, Gerhard, 4,309,542, Cl. 546-075.000.

Sauer, Donald G., to National Can Corporation. Process for making multilayered containers. 4,309,380, Cl. 264-511.000.

Sauer, Hans: *See—*
Kuhl, Thomas; and Sauer, Hans, 4,309,493, Cl. 429-172.000.

Saul, Hans-Peter: *See—*
Krebs, Gerd; Friedrich, Rainer; and Saul, Hans-Peter, 4,309,161, Cl. 425-115.000.

Sauter, Dieter: *See—*
Baron, Gerhard; Sauter, Dieter; and Sindel, Wolfgang, 4,309,190, Cl. 44-16.00R.

Sawyer, Willard H., to Exxon Research & Engineering Co. Catalyst and hydroconversion process utilizing the same. 4,309,278, Cl. 208-111.000.

Sayovitz, Michael G., to Compact Video Sales, Inc. Vehicle mounting for a portable microwave antenna dish. 4,309,708, Cl. 343-713.000.

Scapa Dryers, Inc.: *See—*
Westhead, William T., 4,308,897, Cl. 139-383.00A.

Schaefer, Jack: *See—*
Zweig, Richard L.; Schaefer, Jack; and Frank, Daniel G., 4,309,575, Cl. 179-107.0BC.

Schafer, Willi: *See—*
Reuschenbach, Hermann; and Schafer, Willi, 4,309,026, Cl. 267-121.000.

Schaffner, Bruno: *See—*
Bula, Karl; and Schaffner, Bruno, 4,308,906, Cl. 152-219.000.

Schallert, Joseph M. Submerged burner furnace. 4,308,855, Cl. 126-360.00A.

Schaumman, Kurt: *See—*
Weibelzahl, Manfred; Meusel, Wolfgang; and Schaumman, Kurt, 4,309,749, Cl. 363-87.000.

Schefer, Kurt; and Flueckiger, Peter, to Rieter Machine Works, Ltd. Doffer mechanisms. 4,309,000, Cl. 242-18.00A.

Schenk, Peter, to Dzus Fastener Co., Inc. Front insert receptacle. 4,308,646, Cl. 24-221.00R.

Scherrer, Hanspeter: *See—*
Boller, Arthur; Cereghetti, Marco; and Scherrer, Hanspeter, 4,309,539, Cl. 544-242.000.

Schieser, Warren J.; and Duffey, Craig L., to Liqui-Box Corporation. Interfitting, stackable bottles. 4,308,955, Cl. 206-509.000.

Schinzel, Erich, to Hoechst Aktiengesellschaft. Process for the manufacture of bis-benzo-furanyl compounds. 4,309,536, Cl. 542-454.000.

Schinzel, Erich: *See—*
Schonberger, Norbert; Schinzel, Erich; Martini, Thomas; and Rosch, Gunter, 4,309,551, Cl. 548-324.000.

Schlegel (UK) Limited: *See—*
Hinton, Kevin; and Guymer, Barry R., 4,308,653, Cl. 29-235.000.

Schliep, Hans-Jochen: *See—*
Radunz, Hans-Eckart; Orth, Dieter; Baumgarth, Manfred; Schliep, Hans-Jochen; and Enenkel, Hans-Joachim, 4,309,441, Cl. 424-305.000.

Schloemann-Siemag Aktiengesellschaft: *See—*
Beckmann, Wilhelm; and Mogendorf, Friedel, 4,308,945, Cl. 198-750.000.

Schmaltz, Armand J.: *See—*
Adamson, Thomas; and Schmaltz, Armand J., 4,309,132, Cl. 407-38.000.

Schmid, Karlheinz, to Gebrueder Heller, Maschinenfabrik GmbH. Crankshaft milling machine. 4,309,134, Cl. 409-231.000.

Schmidt, Andrea: *See—*
Girodi, Erich; Richter, Gerhard; Neumann, Berthold; Jaschke, Peter; Slabik, Johannes; Weber, Roland; Schmidt, Andrea; Krieg, Peter; Groschel, Lutz; Heynisch, Joachim; Starke, Joachim; Wienold, Dietrich; Scholz, Gunter; and Monch, Eckehard, 4,309,193, Cl. 48-66.000.

Schmidt, Jacques, to Societe Anonyme ASEA JUMET. Multiple condenser equipped with cooling means and process for its manufacture. 4,309,739, Cl. 361-274.000.

Schmidt, Manfred, to Vereinigte Baubeschlagfabriken Gretsch & Co., GmbH. Cross-country ski binding. 4,309,044, Cl. 280-615.000.

Schmidt, Rainer. Deburring apparatus. 4,308,630, Cl. 15-21.00D.

Schmidt, Thomas; Wittig, Andreas; Sehnem, Hans-Peter; Kratzer, Hans; and Singer, Rolf-Jurgen, to Bayer Aktiengesellschaft. Preparation of 4-amino-6-tert.-butyl-3-alkylthio-1,2,4-triazin-5(4H)-ones. 4,309,538, Cl. 544-182.000.

Schmidt, Ulrich, to Estel Hoesch Werke Aktiengesellschaft. Apparatus for stamping indicia on workpieces moving in a path. 4,308,793, Cl. 101-44.000.

Schmied, Helmut: *See—*
Pfaff, Georg; and Schmied, Helmut, 4,308,848, Cl. 123-618.000.

Schmitmann, Herbert: *See—*
Brunn, Klaus; Matura, Eike; Polster, Walter; and Schmitmann, Herbert, 4,309,613, Cl. 250-409.000.

Schneider, Gernot: *See—*
Lienhard, Heinz; and Schneider, Gernot, 4,309,655, Cl. 324-117.00R.

Schneider, Walter: *See—*
Hodes, Erich; Sternisa, Danilo; and Schneider, Walter, 4,309,474, Cl. 428-328.000.
Scholz, Gunter: *See—*
Girodi, Erich; Richter, Gerhard; Neumann, Berthold; Jaschke, Peter; Slabik, Johannes; Weber, Roland; Schmidt, Andrea; Krieg, Peter; Groschel, Lutz; Heynisch, Joachim; Starke, Joachim; Wienold, Dietrich; Scholz, Gunter; and Monch, Eckehard, 4,309,193, Cl. 48-66.000.
Schonberger, Norbert; Schinzel, Erich; Martini, Thomas; and Rosch, Gunter, to Hoechst Aktiengesellschaft. Quaternized, bridged benzimidazolylbenzimidazoles, processes for their preparation and their use. 4,309,551, Cl. 548-324.000.
Schosek, William O. Installation rod for an underground pipe installer device. 4,309,122, Cl. 403-307.000.
Schroder, Norbert, to Kuckels, Gerhard. Arrangement for controlling the advancing device of a machine for repetitive operations. 4,308,775, Cl. 83-289.000.
Schroder, Rolf: *See—*
Stemme, Otto; Lermann, Peter; Wagner, Karl; Engelsmann, Dieter; and Schroder, Rolf, 4,309,097, Cl. 354-173.000.
Schroeder, Robert W., to Romark Technologies, Inc. Gutter cover assembly. 4,308,696, Cl. 52-11.000.
Schubert, William L.: *See—*
Holm, Charles H.; Schubert, William L.; and Sitorius, Howard E., 4,309,742, Cl. 362-78.000.
Schulte, Wilfried: *See—*
Bender, Werner; Bergner, Dieter; Hannesen, Kurt; Muller, Wolfgang; and Schulte, Wilfried, 4,309,264, Cl. 204-256.000.
Schultz, William J.; and Katritzky, Alan R., to Minnesota Mining and Manufacturing Company. Polymers containing 2,5-oxolanylene segments. 4,309,516, Cl. 525-334.000.
Schuster, Erich: *See—*
Hahn, Herbert; Jacoby, Hans-Dieter; Jung, Richard; and Schuster, Erich, 4,308,666, Cl. 33-166.000.
Schwartz, Albert B.: *See—*
Rosinski, Edward J.; and Schwartz, Albert B., 4,309,280, Cl. 208-120.000.
Schwindt, Jurgen: *See—*
Ganster, Otto; and Schwindt, Jurgen, 4,309,378, Cl. 264-311.000.
Scientific Process & Research, Inc.: *See—*
Klein, Reuben; and Klein, Imrich, 4,309,114, Cl. 366-79.000.
Scifres, Donald R.: *See—*
Burnham, Robert D.; Scifres, Donald R.; and Streifer, William, 4,309,670, Cl. 331-94.50H.
Scinta, James: *See—*
Billings, William G.; and Scinta, James, 4,309,397, Cl. 423-415.00A.
SCM Corporation: *See—*
Ho, T. L., 4,309,352, Cl. 260-343.500.
Scott, John L.: *See—*
Cahill, Arthur L.; and Scott, John L., 4,309,619, Cl. 290-1.00R.
Scott Paper Company: *See—*
Varona, Eugenio G., 4,309,469, Cl. 428-74.000.
Scott, Robert S.: *See—*
MacPherson, William F.; Scott, Robert S.; and Shackle, Peter W., 4,309,715, Cl. 357-37.000.
Scovill Inc.: *See—*
Christensen, Arthur C., 4,309,631, Cl. 310-50.000.
Sea Energy Corporation: *See—*
Hagen, Glenn E., 4,309,152, Cl. 417-218.000.
Seeholzer, Josef: *See—*
Michaud, Horst; Rock, Heinrich; and Seeholzer, Josef, 4,309,206, Cl. 71-28.000.
Sehnem, Hans-Peter: *See—*
Schmidt, Thomas; Wittig, Andreas; Sehnem, Hans-Peter; Kratzer, Hans; and Singer, Rolf-Jurgen, 4,309,538, Cl. 544-182.000.
Sei, Makio; and Miyashita, Kunio, to Hitachi, Ltd. Squirrel-cage rotor having end rings of double structure. 4,309,635, Cl. 310-211.000.
Seibert, Robert W. Method for manufacturing a seafood product. 4,309,450, Cl. 426-92.000.
Seiki, Kazuo: *See—*
Onoue, Keiji; Katoh, Takashi; Yoshida, Yoshiaki; and Seiki, Kazuo, 4,308,717, Cl. 57-301.000.
Seitz-Werke GmbH: *See—*
Probst, Wolfgang, 4,308,944, Cl. 198-442.000.
Sekiguchi, Shizuo; Tano, Tetsuo; and Kitano, Kyozo, to Lion Corporation. Clear aqueous olefin sulfonate solution. 4,309,317, Cl. 252-555.000.
Semenov, Nikolai I.: *See—*
Vikhlyaev, Alexandr A.; Nosikov, Georgy M.; Semenov, Nikolai I.; and Fedulov, Alexandr I., 4,308,922, Cl. 173-18.000.
Senft, Charles R., to Federal-Mogul Corporation. Workpiece detection device for cyclical machines. 4,308,734, Cl. 72-3.000.
Sensormatic Electronics Corporation: *See—*
Weaver, Jon N., 4,309,697, Cl. 340-572.000.
Senussi, Akiel. Apparatus for slaughtering in accordance with hallal or kosher provisions. 4,308,638, Cl. 17-1.00A.
Serban, Alexander; Farquharson, Graeme J.; Bird, Graham J.; and Lydiate, Jack, to ICI Australia Limited. Herbicidal 1,2,4-benzotriazines. 4,309,211, Cl. 71-93.000.
Seregely, Daniel. Projectile launcher. 4,308,849, Cl. 124-5.000.
Servais, Charles: *See—*
Hanchard, Jean-Pierre; and Servais, Charles, 4,309,080, Cl. 350-312.000.
Sethi, Gurdip S., to Eastman Kodak Company. Film cartridge assembly with pressure plate. 4,309,096, Cl. 354-121.000.
Sevastakis, Gus. Methods and apparatus for effecting quick mandrel changes in continuous casting operations. 4,308,908, Cl. 164-464.000.
Sevylor: *See—*
Leber, Edmond, 4,309,173, Cl. 440-109.000.
Sexton, Robert M.: *See—*
Koroly, James S.; and Sexton, Robert M., 4,309,634, Cl. 310-201.000.
Seyerle, Carl E.: *See—*
Pendry, Warren W.; and Seyerle, Carl E., 4,308,675, Cl. 37-43.00D.
Shackle, Peter W.: *See—*
MacPherson, William F.; Scott, Robert S.; and Shackle, Peter W., 4,309,715, Cl. 357-37.000.
Shannon, Michael A.; and Cowley, William E., to Northern Telecom Limited. Method and apparatus for testing moisture content of pulp insulation during application onto an electrical conductor. 4,309,654, Cl. 324-65.00R.
Shapiro, David: *See—*
Reach, Roy W.; Kahn, William M.; and Shapiro, David, 4,309,761, Cl. 364-900.000.
Sharp Kabushiki Kaisha: *See—*
Doi, Keiichiro; and Kashiwagi, Toshihiro, 4,309,585, Cl. 219-10.55B.
Kamuro, Setsufumi, 4,309,629, Cl. 307-449.000.
Nishimura, Toshio, 4,309,701, Cl. 340-784.000.
Terakami, Yukio, 4,309,584, Cl. 219-10.55B.
Yano, Kohzo; Takechi, Sadatoshi; Inami, Yasuhiko; and Uede, Hisashi, 4,308,658, Cl. 29-570.000.
Yoshikawa, Toshihumi; Tani, Zempei; Aso, Akira; and Kawanabe, Hitoshi, 4,309,604, Cl. 250-226.000.
Shartner, Eduard G.: *See—*
Zitser, Vitaly A.; Melnikov, Alexandr V.; Bachelis, Leonid V.; Shishkin, Nikolai K.; Morozov, Jury E.; Ivanov, Vladimir A.; Olshansky, Semen A.; Dreishev, Igor I.; Stolyar, Eduard A.; Kushelman, Vladimir S.; Shartner, Eduard G.; Abaskalov, Vladimir D.; and Levinson, Vladimir A., 4,308,909, Cl. 164-207.000.
Shaw, Nicholas A.: *See—*
Long, Douglas G.; Hemrich, William R.; and Shaw, Nicholas A., 4,309,595, Cl. 219-370.000.
Shaw, Wilfrid G.; Paparizos, Christos; and Velenyi, Louis J., to Standard Oil Company. Process for removing nitrogen oxides from a gas stream. 4,309,392, Cl. 423-239.000.
Sheibley, Dean W., to United States of America, National Aeronautics and Space Administration. Method of making formulated plastic separators for soluble electrode cells. 4,309,372, Cl. 264-45.300.
Shell Container Systems: *See—*
Cohen, Joel B., 4,308,953, Cl. 206-334.000.
Shell Oil Company: *See—*
Corley, Larry S., 4,309,515, Cl. 525-316.000.
Shenk, Edwin K., to Polaroid Corporation. Autofocus cine camera having automatic variable speed focusing. 4,309,098, Cl. 354-195.000.
Shepherd, John, to Thomson-Brandt. Line scanning circuit for a television receiver. 4,309,641, Cl. 315-408.000.
Shepherd, Robert G., to American Cyanamid Company. Aldehydes and ketones containing a 4-(monoalkylamino)-benzoyl substituent. 4,309,553, Cl. 549-22.000.
Sherwood Medical Industries Inc.: *See—*
Ashley, Holvor W.; and Li, Vincent H., 4,309,112, Cl. 356-436.000.
Sheth, Atul C., to United States of America, Energy. Conversion of alkali metal sulfate to the carbonate. 4,309,398, Cl. 423-428.000.
Shibata, Akira, to Chugai-Duki Kogyo Kabushiki-Kaisha. Method of compounding decorative precious metal alloy selectively onto austenite stainless steel article. 4,309,461, Cl. 427-259.000.
Shibata, Tadashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing a semiconductor device. 4,309,224, Cl. 148-1.500.
Shibata, Tutomu: *See—*
Saitou, Sinichi; Kato, Toshikazu; Watanabe, Seizo; Nishiyama, Toyoo; Shimoda, Misao; Shibata, Tutomu; Kimura, Kenji; and Satoh, Ken, 4,309,002, Cl. 242-198.000.
Shimada, Keizo: *See—*
Nakamura, Tsutomu; Nakagawa, Yasuo; Kai, Osamu; and Shimada, Keizo, 4,309,476, Cl. 428-373.000.
Shimano Industrial Company Limited: *See—*
Shimano, Keizo, 4,308,761, Cl. 74-489.000.
Shimano, Keizo, to Shimano Industrial Company Limited. Operating lever apparatus for bicycle. 4,308,761, Cl. 74-489.000.
Shimoda, Misao: *See—*
Saitou, Sinichi; Kato, Toshikazu; Watanabe, Seizo; Nishiyama, Toyoo; Shimoda, Misao; Shibata, Tutomu; Kimura, Kenji; and Satoh, Ken, 4,309,002, Cl. 242-198.000.
Shinoda, Tadashi: *See—*
Yoshida, Masashi; Kawase, Hideyuki; and Shinoda, Tadashi, 4,309,731, Cl. 360-85.000.
Shinozaki, Fumiaki; Namiki, Tomizo; Kitajima, Masao; Ikeda, Tomoaki; and Mizobuchi, Yuzo, to Fuji Photo Film Co., Ltd. Thermal recording elements. 4,309,713, Cl. 346-135.100.
Shionogi & Co., Ltd.: *See—*
Hirai, Kentaro; Ishiba, Teruyuki; Matsutani, Shigeru; Makino, Itsuo; Fujishita, Toshio; Doteuchi, Masami; and Otani, Koichi, 4,309,433, Cl. 424-266.000.
Shiozawa, Kazuo: *See—*
Uchida, Yasuo; Yagi, Michio; and Shiozawa, Kazuo, 4,309,088, Cl. 354-21.000.
Shishido, Tadao, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material. 4,309,500, Cl. 430-507.000.

Shishkin, Nikolai K.: *See—*
Zitser, Vitaly A.; Melnikov, Alexandr V.; Bachelis, Leonid V.; Shishkin, Nikolai K.; Morozov, Jury E.; Ivanov, Vladimir A.; Olshansky, Semen A.; Dreishev, Igor I.; Stolyar, Eduard A.; Kushelman, Vladimir S.; Shartner, Eduard G.; Abaskalov, Vladimir D.; and Levinson, Vladimir A., 4,308,909, Cl. 164-207.000.

Shoji, Yutaka; Suzuki, Yoshio; Sugiura, Shigekata; and Inoue, Akihiko, to Alps Electric Co., Ltd. Miniature variable resistor. 4,309,690, Cl. 338-163.000.

Shore, Daniel B.; and Chatterjea, Probir K., to International Harvester Company. Clutch-brake steering valve mechanism for tractors. 4,308,893, Cl. 137-625.690.

Shouda, Hiroyuki; and Sakurado, Kenichi, to Nippon Colin Co., Ltd. Cuff mechanism for blood pressure measuring system. 4,308,871, Cl. 128-686.000.

Showa Denko K.K.: *See—*
Suzuki, Hiroshi, 4,309,563, Cl. 560-64.000.

Shukla, Mahendra B.: *See—*
Pudark, Arthur A.; Niesen, George P.; Bach, Frederick O.; and Shukla, Mahendra B., 4,309,102, Cl. 355-14.0SH.

Shumaker, John F., to J. I. Case Company. See-through bucket. 4,309,142, Cl. 414-722.000.

Siebert, Edward T., to Perkin-Elmer Corporation, The. Analyzer for coherent radiation. 4,309,108, Cl. 356-352.000.

Siebert, Werner: *See—*
Beck, Kurt-Gunther; Habermehl, Diethard; Kucharzyk, Werner; and Siebert, Werner, 4,309,253, Cl. 201-30.000.

Siegas-Metallwarenfabrik Wilhelm Loh GmbH & Co. KG: *See—*
Rabe, Erich, 4,309,675, Cl. 331-172.000.

Siemens Aktiengesellschaft: *See—*
Aichinger, Horst, 4,309,612, Cl. 250-409.000.
Bodlaj, Viktor, 4,309,103, Cl. 356-1.000.
Brunn, Klaus; Matura, Eike; Polster, Walter; and Schmitmann, Herbert, 4,309,613, Cl. 250-409.000.
Kraicar, Heinz; and Ziegler, Alfred, 4,309,577, Cl. 179-170.00J.
Lechner, Robert; and Monat, Hermann, 4,309,766, Cl. 370-110.000.
Mueller, Helmut; von Ow, Hans P.; Rambold, Thomas; and Werres, Bernhard, 4,309,765, Cl. 370-99.000.
Muller, Otto; Kullmann, Dieter; and Weghaupt, Erich, 4,309,632, Cl. 310-52.000.
Pollok, Hans-Jurgen, 4,309,636, Cl. 310-260.000.
Tauer, Karl M., 4,309,699, Cl. 340-715.000.
Utner, Ferdinand; and Vetter, Harald, 4,309,687, Cl. 338-2.000.
Weibelzahl, Manfred; Meusel, Wolfgang; and Schaumman, Kurt, 4,309,749, Cl. 363-87.000.

Sigmund, Ludwig; Golzer, Norbert; and Steigerwald, Franz, to Wella Aktiengesellschaft. Dispensing device with one-hand operation for pasty substances. 4,308,977, Cl. 222-320.000.

Silberberg, Joseph, to Stauffer Chemical Company. Filled polyolefin compositions and filler material. 4,309,333, Cl. 260-42.140.

Silva, Wilbur W. Curling iron holder. 4,308,878, Cl. 132-37.00R.

Simon, Frank J.; and Slater, Wilfred B., to Ralston Purina Company. Chemical analysis for quality determination of tuna. 4,309,185, Cl. 23-230.00R.

Sims, William H., to Chamberlain Manufacturing Corporation. Evacuated envelope and solar energy receiver. 4,308,857, Cl. 126-443.000.

Sindel, Wolfgang: *See—*
Baron, Gerhard; Sauter, Dieter; and Sindel, Wolfgang, 4,309,190, Cl. 44-16.00R.

Singer, Rolf-Jurgen: *See—*
Schmidt, Thomas; Wittig, Andreas; Sehnem, Hans-Peter; Kratzer, Hans; and Singer, Rolf-Jurgen, 4,309,538, Cl. 544-182.000.

Singh, Shobha; Van Uitert, LeGrand G.; and Zydzik, George J., to Bell Telephone Laboratories, Incorporated. Process for producing gold films. 4,309,460, Cl. 427-250.000.

Singh, Shobha: *See—*
Camlibel, Irfan; Singh, Shobha; Van Uitert, LeGrand G.; and Zydzik, George J., 4,309,081, Cl. 350-357.000.

Sirks, Walter M. Baby bottle holder. 4,309,008, Cl. 248-105.000.

Sitorius, Howard E.: *See—*
Holm, Charles H.; Schubert, William L.; and Sitorius, Howard E., 4,309,742, Cl. 362-78.000.

Sizemore, Ronald D.; Tucci, John J.; and Willette, Albert D., to AMP Inc. Molding plastic bodies on continuous strip. 4,309,370, Cl. 264-40.500.

Skillman, Dale N. Solar energy collecting apparatus and methods. 4,308,858, Cl. 126-450.000.

SKW Trostberg Aktiengesellschaft: *See—*
Michaud, Horst; Rock, Heinrich; and Seeholzer, Josef, 4,309,206, Cl. 71-28.000.

Slabik, Johannes: *See—*
Girodi, Erich; Richter, Gerhard; Neumann, Berthold; Jaschke, Peter; Slabik, Johannes; Weber, Roland; Schmidt, Andrea; Krieg, Peter; Groschel, Lutz; Heynisch, Joachim; Starke, Joachim; Wienold, Dietrich; Scholz, Gunter; and Monch, Eckehard, 4,309,193, Cl. 48-66.000.

Slater, Wilfred B.: *See—*
Simon, Frank J.; and Slater, Wilfred B., 4,309,185, Cl. 23-230.00R.

Slatter, John A. G., to U.S. Philips Corporation. Gate turn-off diodes and arrangements including such diodes. 4,309,714, Cl. 357-22.000.

Sleep Knit Corporation: *See—*
Weiss, Sidney M., 4,308,626, Cl. 5-485.000.

Slemmons, John W. Reversable two-position frame hanger. 4,309,017, Cl. 248-495.000.

Sloan-Kettering Research Institute for Cancer: *See—*
Green, Saul, 4,309,418, Cl. 424-177.000.

Slobin, Joel B. Two-date reminder. 4,308,678, Cl. 40-113.000.

Slysh, Paul, to General Dynamics Corporation. Structural strut and node for large space structures. 4,308,699, Cl. 52-108.000.

Small, Martin H.; Davis, Janeece J.; and Elkins, Peggy C. Surgical extremity drape. 4,308,864, Cl. 128-132.00D.

Smith, Brian W.: *See—*
Hoerger, Carl R.; and Smith, Brian W., 4,308,884, Cl. 137-14.000.

Smith, David G.; and Ainsworth, Anthony T., to Beecham Group Limited. Cinnamic acid derivatives, their preparation, and pharmaceutical compositions containing them. 4,309,443, Cl. 424-319.000.

Smith, Eugene L., Jr.; Poulos, Andrew C.; and Ellwanger, Richard E., to American Cyanamid Company. Process of phosphate ore beneficiation in the presence of residual organic polymeric flocculants. 4,309,282, Cl. 209-166.000.

Smith, Ian W.: *See—*
Tyler, Ralph J.; Smith, Ian W.; and Edwards, James H., 4,309,270, Cl. 208-8.00R.

Smith, Jay A.; and Luenser, Susan J., to CPC International Inc. Process for the production of fructose transferase enzyme. 4,309,505, Cl. 435-193.000.

Smith, Kenneth L., to United States of America, Air Force. Beam position locater with photodetector array. 4,309,106, Cl. 356-121.000.

Smith, Robert L.: *See—*
Bock, Mark G.; and Smith, Robert L., 4,309,430, Cl. 424-250.000.
Bock, Mark G.; Cragoe, Edward J., Jr.; and Smith, Robert L., 4,309,540, Cl. 544-405.000.

Smith, Sidney M. Flasher. 4,309,741, Cl. 362-72.000.

Smiths Industries Limited: *See—*
St. Leger Searle, Simon M., 4,309,070, Cl. 350-3.700.

Snyder, Clinton D.: *See—*
Gendler, Paul L.; Grant, Barbara D.; and Snyder, Clinton D., 4,309,255, Cl. 204-2.000.

Sobotta, Reinhard, to Rollei-Werke Franke & Heidecke. Worm gear mount. 4,308,759, Cl. 74-384.000.

Sobresky, Edmund J., Sr. Visual coin grader. 4,309,111, Cl. 356-394.000.

Societe Anonyme ASEA JUMET: *See—*
Schmidt, Jacques, 4,309,739, Cl. 361-274.000.

Societe Anonyme dite Compagnie Generale d'Electricite: *See—*
Brec, Raymond; Le Mehaute, Alain; and Dugast, Alain, 4,309,491, Cl. 429-112.000

Societe Anonyme dite: Legris: *See—*
Legris, Andre, 4,309,050, Cl. 285-341.000.

S.A. Lipsudest: *See—*
Durand, Francois; and Besse, Lucien, 4,308,856, Cl. 126-418.000.

Societe Lyonnaise de Ventilation Industrielle Solyvent-Ventec: *See—*
Cottancin, Gerard, 4,309,163, Cl. 425-543.000.

Societe Metallurgique de Bretagne: *See—*
Laquerbe, Michel; and Tatard, Francois, 4,309,325, Cl. 260-29.40R.

Solis S.r.l.: *See—*
Gazzarrini, Vinicio, 4,308,980, Cl. 223-43.000.

Solomon, Merrill. Remailable envelope. 4,308,987, Cl. 229-73.000.

Somers, M. John: *See—*
Cooper, Jerry W.; Holden, Homer N.; Haren, Doyle V.; Haley, John S.; and Somers, M. John, 4,308,801, Cl. 105-199.00C.

Someya, Sinzo: *See—*
Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Someya, Sinzo; and Sakashita, Nobuyuki, 4,309,562, Cl. 71-108.000.

Sony Corporation: *See—*
Mibu, Katsutoshi; and Kitsunezaki, Hikaru, 4,309,702, Cl. 340-870.180.
Okanobu, Taiwa, 4,309,656, Cl. 324-131.000.

Scuriau & Cie (SA): *See—*
Prunier, Jean-Claude, 4,309,071, Cl. 350-96.210.

Southwire Company: *See—*
Ward, George C., 4,309,170, Cl. 432-96.000.

Spater, Stuart S., to Nichols Engineering & Research Corp. High temperature damper. 4,308,805, Cl. 110-163.000.

Spector, Donald. Adhesive mounting for wall fixtures. 4,309,011, Cl. 248-205.00A.

Speer, Eugene M.; and Hahn, Paul G. Personal protective device. 4,308,976, Cl. 222-78.000.

Speranza, George P.: *See—*
Cuscurida, Michael; Grice, Neal J.; and Speranza, George P., 4,309,532, Cl. 536-4.000.

Sperry Corporation: *See—*
Vansteelant, Marc G., 4,309,051, Cl. 289-2.000.

Sperry, Elmer A., III: *See—*
Levine, Melvin; Jacobetz, Paul J.; and Sperry, Elmer A., III, 4,309,262, Cl. 204-195.00R.

Sperry Limited: *See—*
Thomas, Alan V.; and Bone, Geoffrey E., 4,308,721, Cl. 60-634.000.

Spoon, Donald M. Throw toy. 4,309,038, Cl. 273-428.000.

Sproul, Nolte V., to Dyneer Corporation. Belt tensioner construction. 4,309,174, Cl. 474-135.000.

Square D Company: *See—*
Draper, Charles W.; and Legatti, Raymond H., 4,309,681, Cl. 335-18.000.

Squires, Robert W., to Eli Lilly and Company. Fermentation system and failure-detection probe holder. 4,309,506, Cl. 435-291.000.

Stabilus GmbH: *See—*
Molders, Werner; and Luhn, Wolfgang, 4,309,027, Cl. 267-124.000.
Reuschenbach, Hermann; and Schafer, Willi, 4,309,026, Cl. 267-121.000.

Stacey, Eric J., to Westinghouse Electric Corp. Cycloconverter apparatus with controllable end stop firing pulse control means. 4,309,752, Cl. 363-160.000.

Stach, Leonard J.; and Wilke, Robert N., to Velsicol Chemical Corporation. Benzoylhydrazones of aryl phosphates and phosphonates. 4,309,422, Cl. 424-211.000.

Stack, Timothy F.; and Calcasola, Richard W., to United Technologies Corporation. Elimination of line impedance error in a three-wire probe interface. 4,309,653, Cl. 323-369.000.

Staehli, Gustav, to Rieter Machine Works Ltd. Spinning ring made from steel for ring spinning and ring twisting machine. 4,308,715, Cl. 57-119.000.

Stamicarbon, B.V.: *See*—
Bour, Edmond H. J. P.; Brouwers, Johannes A. L.; and Warnier, Jean M. M., 4,309,530, Cl. 528-326.000.

Standard Oil Company: *See*—
Callahan, James L., 4,309,310, Cl. 252-431.00P.
Shaw, Wilfrid G.; Paparizos, Christos; and Velenyi, Louis J., 4,309,392, Cl. 423-239.000.
Suresh, Dev D.; Grasselli, Robert K.; and Orndoff, David A., 4,309,361, Cl. 260-465.300.

Standard Oil Company (Indiana): *See*—
Harper, Jon J.; and Pietsch, Stephen J., 4,309,390, Cl. 423-150.000.
Keske, Robert G.; and Stephens, James R., 4,309,528, Cl. 528-188.000.

Stannard, Forrest B.; and Highstreet, Edward J., to Dehydro Corporation, The. Filtering methods. 4,309,292, Cl. 210-792.000.

Staples, Lorna C., to Stauffer Chemical Company. Protein fortified isotonic beverages. 4,309,417, Cl. 424-128.000.

Stapleton, Charles E.: *See*—
Millar, Robert J.; Stapleton, Charles E.; and Hauf, John M., 4,308,755, Cl. 73-861.770.

Star Seimitsu Kabushiki Kaisha: *See*—
Maeda, Katsumi, 4,309,116, Cl. 400-124.000.

Starke, Joachim: *See*—
Girodi, Erich; Richter, Gerhard; Neumann, Berthold; Jaschke, Peter; Slabik, Johannes; Weber, Roland; Schmidt, Andrea; Krieg, Peter; Groschel, Lutz; Heynisch, Joachim; Starke, Joachim; Wienold, Dietrich; Scholz, Gunter; and Monch, Eckehard, 4,309,193, Cl. 48-66.000.

Starr, Anthony J.: *See*—
Heisler, Jerome S.; and Starr, Anthony J., 4,308,969, Cl. 220-266.000.

State of Israel Ministry of Agriculture, The: *See*—
Kessler, Bezalel, 4,309,205, Cl. 71-27.000.

Stauffer Chemical Company: *See*—
Coll-Palagos, Miguel; and Benkwitt, Frances C., 4,309,409, Cl. 424-52.000.
Silberberg, Joseph, 4,309,333, Cl. 260-42.140.
Staples, Lorna C., 4,309,417, Cl. 424-128.000.

Stauffer, Norman L., to Honeywell Inc. Auto focus system. 4,309,603, Cl. 250-204.000.

Steffen, Robert G.; Gregory, David L.; and Blough, LeVone A., to Blough, LeVone A. Self-locking threaded fastener and unlocking tool combination. 4,309,140, Cl. 411-264.000.

Steigerwald, Franz: *See*—
Sigmund, Ludwig; Golzer, Norbert; and Steigerwald, Franz, 4,308,977, Cl. 222-320.000.

Steinberg, Meyer; Powell, James R.; Takahashi, Hiroshi; Grand, Pierre; and Kouts, Herbert, to United States of America, Energy. Neutron source, linear-accelerator fuel enricher and regenerator and associated methods. 4,309,249, Cl. 376-192.000.

Steiner, Rudolf: *See*—
Herbrechtsmeier, Peter; Steiner, Rudolf; and Vilcsek, Herbert, 4,309,396, Cl. 423-393.000.

Steinke, John J.; and Kaufman, George, to Church & Dwight Co., Inc. Resealable container. 4,308,956, Cl. 206-611.000.

Steinman, David A., to United States of America, Energy. Method and apparatus for determining diameter and wall thickness of minute hollow spherical shells. 4,308,750, Cl. 73-432.0PS.

Stemme, Otto; Lermann, Peter; Wagner, Karl; Engelsmann, Dieter; and Schroder, Rolf, to AGFA-Gevaert AG. Still-camera film transport system with motor deenergization at end of film. 4,309,097, Cl. 354-173.000.

Stempin, John L.: *See*—
Flannery, James E.; Stempin, John L.; and Wexell, Dale R., 4,309,218, Cl. 501-32.000.
Flannery, James E.; Stempin, John L.; and Wexell, Dale R., 4,309,219, Cl. 501-32.000.

Stepanian, Josephine W. Pet waste odor removing device. 4,308,825, Cl. 119-1.000.

Stephen, Stuart J., to AHI Operations, Limited. Methods and apparatus for measuring electrical conductivity. 4,309,660, Cl. 324-442.000.

Stephens, James R.: *See*—
Keske, Robert G.; and Stephens, James R., 4,309,528, Cl. 528-188.000.

Sterling Drug Inc.: *See*—
Desmarais, Leon O., 4,309,322, Cl. 260-28.50R.
Lesher, George Y.; Opalka, Chester J., Jr.; and Page, Donald F., 4,309,537, Cl. 544-127.000.

Sternisa, Danilo: *See*—
Hodes, Erich; Sternisa, Danilo; and Schneider, Walter, 4,309,474, Cl. 428-328.000.

Stewart Sanitary Supply, Inc.: *See*—
Miller, Richard A., 4,309,382, Cl. 422-4.000.

Stillman, Nathan, to Champion International Corporation. Flexible laminated packaging material comprising metallized intermediate layer. 4,309,466, Cl. 428-35.000.

Stobbs, William: *See*—
Sublette, John D.; and Stobbs, William, 4,309,574, Cl. 179-84.00T.

Stockel, Richard F. Electrochemical cell having battery separator of ethylene-vinyl alcohol copolymer. 4,309,494, Cl. 429-254.000.

Stokes, Samuel L. Apparatus for pyrolysis of municipal waste utilizing heat recovery. 4,308,807, Cl. 110-257.000.

Stol, Israel, to Westinghouse Electric Corp. Narrow groove welding torch. 4,309,590, Cl. 219-137.620.

Stolyar, Eduard A.: *See*—
Zitser, Vitaly A.; Melnikov, Alexandr V.; Bachelis, Leonid V.; Shishkin, Nikolai K.; Morozov, Jury E.; Ivanov, Vladimir A.; Olshansky, Semen A.; Dreishev, Igor I.; Stolyar, Eduard A.; Kushelman, Vladimir S.; Shartner, Eduard G.; Abaskalov, Vladimir D.; and Levinson, Vladimir A., 4,308,909, Cl. 164-207.000.

Stone and Webster Eng. Corp.: *See*—
Dahlstrom, Rodney A.; and Rubin, Jacob N., 4,309,254, Cl. 203-47.000.

Stone & Webster Engineering Corporation: *See*—
Johnson, Axel R.; and Woebcke, Herman N., 4,309,272, Cl. 208-72.000.

Stork PMT B.V.: *See*—
van Mi, Martinus P. G., 4,308,639, Cl. 17-11.000.

Storz, Frederick G.: *See*—
Boyd, Gary D.; Coldren, Larry A.; and Storz, Frederick G., 4,309,267, Cl. 204-298.000.

Stott, Frank D.: *See*—
Watson, Herman L.; Sackner, Marvin A.; and Stott, Frank D., 4,308,872, Cl. 128-725.000.

Stover, William A.: *See*—
Chester, Arthur W.; Cormier, William E., Jr.; and Stover, William A., 4,309,279, Cl. 208-120.000.

Straub, Hermann, to Sulzer Brothers Limited. Pressure vessel and a method of producing same. 4,308,971, Cl. 220-315.000.

Streifer, William: *See*—
Burnham, Robert D.; Scifres, Donald R.; and Streifer, William, 4,309,670, Cl. 331-94.50H.

Strickland, William N., to Bonnie Corp. Blowout preventer. 4,308,918, Cl. 166-326.000.

Strohmeyer, Rolf: *See*—
Ahlf, Heinz-Jurgen; and Strohmeyer, Rolf, 4,309,048, Cl. 285-7.000.

Sublette, John D.; and Stobbs, William, to GTE Automatic Electric Labs Inc. Electronic tone ringer. 4,309,574, Cl. 179-84.00T.

Suda, Seiji: *See*—
Tokuda, Hiroastu; Konno, Akihiko; and Suda, Seiji, 4,309,759, Cl. 364-431.050.

Sudyka, Edward P.: *See*—
Ryan, John O.; Corkery, Joseph L.; Sudyka, Edward P.; Brill, Gerow D.; Reagan, Anne M.; and Holzgrafe, James R., 4,309,723, Cl. 358-163.000.

Sugano, Kazuhiko: *See*—
Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, 4,308,765, Cl. 74-869.000.

Sugasawa, Fukashi; and Iizuka, Haruhiko, to Nissan Motor Company, Limited. Internal combustion engine. 4,308,831, Cl. 123-198.00F.

Sugimoto, Hidehiko, to Mitsubishi Denki Kabushiki Kaisha. Inverter device. 4,309,750, Cl. 363-138.000.

Sugiura, Shigekata: *See*—
Shoji, Yutaka; Suzuki, Yoshio; Sugiura, Shigekata; and Inoue, Akihiko, 4,309,690, Cl. 338-163.000.

Sugiyama, Isao: *See*—
Nomoto, Seiichiro; Ikuta, Hironori; Machida, Yoshimasa; Negi, Shigeto; Sugiyama, Isao; Yamauchi, Hiroshi; Nakatsuka, Kenro; and Saito, Isao, 4,309,354, Cl. 260-345.200.

Sulzer Brothers Limited: *See*—
Bula, Karl; and Schaffner, Bruno, 4,308,906, Cl. 152-219.000.
Geisseler, Max, 4,308,885, Cl. 137-67.000.
Straub, Hermann, 4,308,971, Cl. 220-315.000.

Sumida, Seizo: *See*—
Takemoto, Ichiki; Sumida, Seizo; Yoshida, Ryo; and Kamoshita, Katsuzo, 4,309,212, Cl. 71-120.000.

Sumita, Isao: *See*—
Suzuki, Takashi; Sumita, Isao; and Imai, Akihiro, 4,309,482, Cl. 428-413.000.

Sumitomo Chemical Company, Limited: *See*—
Ohmae, Tadayuki; and Kanno, Yoshinori, 4,309,484, Cl. 428-441.000.
Ohno, Nobuo; Ohno, Isao; Nishioka, Toshio; Takeda, Hisami; and Kasamatsu, Kiyoshi, 4,309,439, Cl. 424-282.000.
Takemoto, Ichiki; Sumida, Seizo; Yoshida, Ryo; and Kamoshita, Katsuzo, 4,309,212, Cl. 71-120.000.
Ueno, Katsuji; Inoue, Haruo; and Furuta, Akihiro, 4,309,513, Cl. 525-68.000.

Sun Coast Plastic Closures, Inc.: *See*—
Dutt, Herbert V., 4,308,965, Cl. 215-345.000.

Sunbeam Corporation: *See*—
Crowley, George C., 4,309,596, Cl. 219-549.000.
Crowley, George C., 4,309,597, Cl. 219-549.000.
Long, Douglas G.; Hemrich, William R.; and Shaw, Nicholas A., 4,309,595, Cl. 219-370.000.

Sundquist, Charles T. Vertical tube distillers. 4,309,243, Cl. 159-24.00B.

Suresh, Dev D.; Grasselli, Robert K.; and Orndoff, David A., to Standard Oil Company. Ammoxidation of olefins with novel antimonate catalysts. 4,309,361, Cl. 260-465.300.

Suyama, Tadakazu: *See*—
Ueda, Yasuo; Kagitani, Yoshio; Sako, Eiji; Suyama, Tadakazu; Komatsu, Nobuhiko; and Satoh, Daisuke, 4,309,437, Cl. 424-274.000.

Suzuki, Hideo; Itakura, Kenji; and Uchiyama, Yasuji, to Nippon Gakki Seizo Kabushiki Kaisha. Control waveform generators for electronic musical instruments. 4,308,779, Cl. 84-1.190.

Suzuki, Hiroshi, to Showa Denko K.K. Xylylene diol derivative. 4,309,563, Cl. 560-64.000.

Suzuki, Koji, to Nippon Bearing Company Limited. Electro-mechanical filter including mechanical resonator. 4,309,680, Cl. 333-197.000.

Suzuki, Masaaki; Aonuma, Masashi; and Tamai, Yasuo, to Fuji Photo Film Co., Ltd. Magnetic audio-recording tape. 4,309,471, Cl. 428-141.000.

Suzuki, Nagatoshi. Air cleaner for engines. 4,309,199, Cl. 55-127.000.

Suzuki, Takashi; Sumita, Isao; and Imai, Akihiro, to Matsushita Electric Industrial Co., Ltd. Magnetic recording medium. 4,309,482, Cl. 428-413.000.

Suzuki, Takashi: *See*—
Abe, Ichiro; Suzuki, Takashi; and Ebara, Toshio, 4,308,818, Cl. 118-211.000.
Kuwayama, Tetsuro; Suzuki, Takashi; and Matsumoto, Kazuya, 4,309,093, Cl. 354-59.000.

Suzuki, Yoshio: *See*—
Shoji, Yutaka; Suzuki, Yoshio; Sugiura, Shigekata; and Inoue, Akihiko, 4,309,690, Cl. 338-163.000.

Svensson, Christer N.: *See*—
Thurner, Heinz F.; Sandstrom, Ake J.; and Svensson, Christer N., 4,308,751, Cl. 73-627.000.

Svoboda, Gordon H., to Eli Lilly and Company. Method of inhibiting growth of tumor cells. 4,309,431, Cl. 424-257.000.

Sylla, Jurgen; and Pahl, Gerrit, to AGFA-Gevaert Aktiengesellschaft. Slide magazine projector. 4,309,087, Cl. 353-92.000.

Symphar S.A.: *See*—
Bentzen, Craig L., 4,309,188, Cl. 23-230.00B.
Bentzen, Craig L.; Mong, Lan N.; and Niesor, Eric, 4,309,364, Cl. 260-931.000.

Tabata, Junichi, to Kabushiki Kaisha Daini Seikosha. Detecting circuit for a power source voltage. 4,309,627, Cl. 307-362.000.

Tabler, Donald C.: *See*—
Johnson, Marvin M.; Tabler, Donald C.; and Nowack, Gerhard P., 4,309,311, Cl. 252-438.000.

Tachibana, Kunitaka: *See*—
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,309,208, Cl. 71-86.000.

Taguchi, Hiromi: *See*—
Nakamura, Hiroya; and Taguchi, Hiromi, 4,309,101, Cl. 355-14.00R.

Taiho Kogyo Co., Ltd.: *See*—
Fukuoka, Tatsuhiko; Fukuda, Takashi; and Okamoto, Shinichi, 4,309,064, Cl. 308-237.00R.

Takagi, Yoshihiro; and Hayashi, Katsumi, to Fuji Photo Film Co., Ltd. Formation of black-and-white silver-containing negative images by a diffusion transfer process. 4,309,499, Cl. 430-250.000.

Takahara, Takeshi: *See*—
Wakatsuki, Tadashi; and Takahara, Takeshi, 4,309,481, Cl. 428-403.000.

Takahashi, Haruo: *See*—
Ito, Teruhiko; and Takahashi, Haruo, 4,309,652, Cl. 323-357.000.

Takahashi, Hiroshi: *See*—
Steinberg, Meyer; Powell, James R.; Takahashi, Hiroshi; Grand, Pierre; and Kouts, Herbert, 4,309,249, Cl. 376-192.000.

Takahashi, Katsushi, to Height, Inc. Slicer. 4,308,778, Cl. 83-751.000.

Takahashi, Mitsuo: *See*—
Kawasumi, Yoshio; and Takahashi, Mitsuo, 4,309,457, Cl. 427-214.000.
Kawasumi, Yoshio; and Takahashi, Mitsuo, 4,309,458, Cl. 427-217.000.

Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Someya, Sinzo; and Sakashita, Nobuyuki, to Ishihara Sangyo Kaisha, Ltd. Herbicidal compound, herbicidal composition containing the same, and method of use thereof. 4,309,562, Cl. 71-108.000.

Takahashi, Toru, to Nippon Electric Co., Ltd. Flip-flop circuit. 4,309,625, Cl. 307-272.00A.

Takahashi, Yoshimasa: *See*—
Nishimura, Itsuro; and Takahashi, Yoshimasa, 4,309,073, Cl. 350-128.000.

Takahashi, Yuichiro. Method and apparatus for improving the strength of soft viscous ground. 4,309,129, Cl. 405-269.000.

Takaishi, Naotake; Urata, Kouichi; Inamoto, Yoshiaki; Okamoto, Kikuhiko; and Tsuchiya, Shuichi, to Kao Soap Co., Ltd. Branched fatty acid cholesterol ester and a cosmetic composition containing the same. 4,309,448, Cl. 424-365.000.

Takami, Akio: *See*—
Kondo, Kazuo; and Takami, Akio, 4,309,485, Cl. 428-457.000.

Takami, Katsumi: *See*—
Tanaka, Eiichi; Nohara, Norimasa; Tomitani, Takehiro; Ishimatsu, Kenji; and Takami, Katsumi, 4,309,611, Cl. 250-363.00S.

Takano, Tomomitsu: *See*—
Takizawa, Yoshiyuki; Itoh, Norihiko; Kashiwazaki, Takashi; Takano, Tomomitsu; and Kobayashi, Junji, 4,309,728, Cl. 360-71.000.

Takata, Yasunobu, to Nissan Motor Company, Limited; and Ichiko Industries Limited. Remote controller. 4,309,740, Cl. 362-66.000.

Takechi, Sadatoshi: *See*—
Yano, Kohzo; Takechi, Sadatoshi; Inami, Yasuhiko; and Uede, Hisashi, 4,308,658, Cl. 29-570.000.

Takeda Chemical Industries, Ltd.: *See*—
Miyashita, Osamu; and Akimoto, Hiroshi, 4,309,428, Cl. 424-248.540.
Nakabayashi, Masamitsu; Doura, Fumihiro; and Furukawa, Yuzo, 4,309,525, Cl. 528-487.000.

Takeda, Hisami: *See*—
Ohno, Nobuo; Ohno, Isao; Nishioka, Toshio; Takeda, Hisami; and Kasamatsu, Kiyoshi, 4,309,439, Cl. 424-282.000.

Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, to Meiji Seika Kaisha, Ltd. Herbicidal compositions and herbicidal processes. 4,309,208, Cl. 71-86.000.

Takemoto, Ichiki; Sumida, Seizo; Yoshida, Ryo; and Kamoshita, Katsuzo, to Sumitomo Chemical Company, Limited. Herbicidal compositions and methods employing urea derivatives. 4,309,212, Cl. 71-120.000.

Takenoya, Hideaki, to Janome Sewing Machine Co., Ltd. Electronic sewing machine with a stitch control device. 4,308,814, Cl. 112-158.00E.

Takii, Yasuo: *See*—
Kondo, Shiro; and Takii, Yasuo, 4,309,579, Cl. 200-5.00E.

Takizawa, Yoshiyuki; Itoh, Norihiko; Kashiwazaki, Takashi; Takano, Tomomitsu; and Kobayashi, Junji, to Pioneer Electronic Corporation. Friction force drive capstan tape recorder. 4,309,728, Cl. 360-71.000.

Takumi, Shizuo; Hashimoto, Toshio; and Tatsushima, Masaru, to Nikki-Universal Co., Ltd. Manufacture of spherical alumina from gibbsite. 4,309,312, Cl. 252-448.000.

Talan, Jacques, to Bassan & Cie. Fastening device. 4,309,136, Cl. 411-36.000.

Tamai, Yasuo: *See*—
Suzuki, Masaaki; Aonuma, Masashi; and Tamai, Yasuo, 4,309,471, Cl. 428-141.000.

Tampa, George R. Security device for automobile spare tires. 4,308,733, Cl. 70-259.000.

Tanabe Seiyaku Co., Ltd.: *See*—
Chibata, Ichiro; Yamada, Shigeki; and Hongo, Chikara, 4,309,362, Cl. 260-501.120.

Tanaka, Eiichi; Nohara, Norimasa; Tomitani, Takehiro; Ishimatsu, Kenji; and Takami, Katsumi, to National Institute of Radiological Sciences; and Hitachi Medical Corporation. Scanner for positron emission computed tomography. 4,309,611, Cl. 250-363.00S.

Tanaka, Hiromichi; Hoshino, Takashi; and Arai, Takao, to Hitachi, Ltd. Muting circuit in a PCM recording and reproducing apparatus. 4,309,726, Cl. 360-32.000.

Tanaka, Nobuyuki; Nishinakamura, Yoichi; and Nakagawa, Kazuyuki, to Otsuka Pharmaceutical Company, Ltd. Compositions for treating glaucoma containing a carbostyril. 4,309,432, Cl. 424-258.000.

Tanaka, Toshie; and Hara, Kunio, to Nifco Inc. Blind rivet. 4,309,137, Cl. 411-45.000.

Tani, Zempei: *See*—
Yoshikawa, Toshihumi; Tani, Zempei; Aso, Akira; and Kawanabe, Hitoshi, 4,309,604, Cl. 250-226.000.

Tano, Tetsuo: *See*—
Sekiguchi, Shizuo; Tano, Tetsuo; and Kitano, Kyozo, 4,309,317, Cl. 252-555.000.

Taoda, Kiyomichi: *See*—
Ito, Yoshifumi; Nishimoto, Yoshihiko; Taoda, Kiyomichi; Sato, Fumiaki; Ueda, Takashi; and Uehara, Seibi, 4,308,668, Cl. 34-30.000.

Tapper, David: *See*—
Bellows, A. Robert; and Tapper, David, 4,308,874, Cl. 128-745.000.

Tatard, Francois: *See*—
Laquerbe, Michel; and Tatard, Francois, 4,309,325, Cl. 260-29.40R.

Tatsushima, Masaru: *See*—
Takumi, Shizuo; Hashimoto, Toshio; and Tatsushima, Masaru, 4,309,312, Cl. 252-448.000.

Tauer, Karl M., to Siemens Aktiengesellschaft. Passive electro-optical display device. 4,309,699, Cl. 340-715.000.

Tavoni, Gian Paolo: *See*—
Cavanna, Giancarlo; and Tavoni, Gian Paolo, 4,308,687, Cl. 47-1.00R.

Taylor, John J.: *See*—
Loncrini, Donald F.; and Taylor, John J., 4,309,564, Cl. 560-67.000.

Taylor, Taliaferro H., Jr., to Harris Corporation. Method and apparatus for processing spread spectrum signals. 4,309,769, Cl. 375-1.000.

Taylor, Thomas E., to Foster Wheeler Energy Corporation. Apparatus and method for reduction of NOx emissions from a fluid bed combustion system through staged combustion. 4,308,810, Cl. 110-347.000.

TDK Electronics Co., Ltd.: *See*—
Ito, Toshimasa; and Aiba, Jiro, 4,309,666, Cl. 330-286.000.
Tokuoka, Yasumichi, 4,309,459, Cl. 427-219.000.

Team Form AG: *See*—
Munz, Johann, 4,308,802, Cl. 108-156.000.

Technology Marketing, Inc.: *See*—
Kraemer, Alan D., 4,309,700, Cl. 340-726.000.

Teed, Richard K., to Riegel Textile Corporation. Process for attaching elastic strips during the manufacture of elastic leg disposable diapers. 4,309,236, Cl. 156-164.000.

Teijin Limited: *See*—
Nakamura, Tsutomu; Nakagawa, Yasuo; Kai, Osamu; and Shimada, Keizo, 4,309,476, Cl. 428-373.000.

Tektronix, Inc.: *See—*
Denham, Dan F., 4,309,720, Cl. 358-75.000.
Gordon, Samuel Y., 4,309,640, Cl. 315-371.000.
Telecommunications Radioelectriques et Telephoniques T.R.T.: *See—*
Baudoux, Jean-Pierre, 4,309,662, Cl. 328-73.000.
Tendler, Robert K. Wall hanger. 4,309,016, Cl. 248-467.000.
Tenney, Robert I.; and Eckstrom, William R. Ozone sterilizing apparatus. 4,309,388, Cl. 422-304.000.
Terakami, Yukio, to Sharp Kabushiki Kaisha. Matrix keyboard for selection of foodstuff and its associated cooking program. 4,309,584, Cl. 219-10.55B.
Teramachi, Hiroshi. Unlimited sliding ball spline assembly. 4,309,061, Cl. 308-6.00C.
Terashima, Toshikatsu, to Nakajima, Nobuyoshi. Device for correction of misprint of a typewriter. 4,309,118, Cl. 400-697.100.
Terlesky, John: *See—*
Vater, Richard A.; and Terlesky, John, 4,308,967, Cl. 220-71.000.
Terrain King Corporation: *See—*
James, Ronald N., 4,308,713, Cl. 56-11.900.
Terui, Yohji: *See—*
Koga, Isao; Terui, Yohji; and Ohgushi, Masuhito, 4,309,558, Cl. 556-479.000.
Tessaro, Vanio, to Calzaturificio San Marco Di Santo Tessaro & C.S.n.c. Ski boot made from synthetic plastic material with separated boot and leg portion. 4,308,674, Cl. 36-118.000.
Testut-Aequitas: *See—*
Estavoyer, Bernard J., 4,308,929, Cl. 177-210.00C.
Teumer, Roger G., to Xerox Corporation. Hidden gutter for ink jet recording system. 4,309,711, Cl. 346-75.000.
Te Velde, Ties S., to U.S. Philips Corporation. Method of manufacturing an electrostatically controlled picture display device. 4,309,242, Cl. 156-644.000.
Texaco Inc.: *See—*
Cuscurida, Michael; Grice, Neal J.; and Speranza, George P., 4,309,532, Cl. 536-4.000.
Patterson, John A., 4,309,363, Cl. 260-513.00R.
Texas Instruments Incorporated: *See—*
Hynecek, Jaroslav; and Roberts, Charles G., 4,309,624, Cl. 307-221.00D.
Therapeople, Inc.: *See—*
Zweig, Richard L.; Schaefer, Jack; and Frank, Daniel G., 4,309,575, Cl. 179-107.0BC.
Thiltgen, Roger W.; Mathews, T. Richard; and Hurst, Walter L., to H.M.T., Inc. Secondary seal for tank having floating roof. 4,308,968, Cl. 220-222.000.
Thirode, Rodger. Forced hot air alimentary oven. 4,308,853, Cl. 126-21.00A.
Thomas, Alan V.; and Bone, Geoffrey E., to Sperry Limited. Fluid supply systems. 4,308,721, Cl. 60-634.000.
Thomas, Alford M.: *See—*
Chu, Daniel T.; Martin, Jerry R.; and Thomas, Alford M., 4,309,342, Cl. 260-112.50R.
Thompson, Chester C., to Radiation Dynamics, Inc. High current, high voltage multiplication apparatus. 4,309,747, Cl. 363-61.000.
Thomson-Brandt: *See—*
Shepherd, John, 4,309,641, Cl. 315-408.000.
Thomson-CSF: *See—*
Clavelloux, Noel; and Peynaud, Francois, 4,308,749, Cl. 73-170.00A.
Di Forte, Marie A.; Papuchon, Michel; and Puech, Claude, 4,309,667, Cl. 331-94.50H.
Picquendar, Jean-Edgar, 4,309,678, Cl. 333-165.000.
Thornbloom, Leah L. Coating implement and applicator. 4,308,879, Cl. 132-88.500.
Thrower, Herbert T., Jr.; and Wasness, Donald S. Light modulator system and method. 4,309,639, Cl. 315-82.000.
Thurner, Heinz F.; Sandstrom, Ake J.; and Svensson, Christer N. Method for investigating an anchored rod-like body having an accessible end, and apparatus for carrying out the method. 4,308,751, Cl. 73-627.000.
Thyssen Aktiengesellschaft: *See—*
Meichsner, Walter, 4,309,025, Cl. 266-216.000.
Thyssen Industrie AG: *See—*
Voigtlander, Otto; and Mages, Walter, 4,308,760, Cl. 74-459.500.
Timmler, Helmut: *See—*
Kramer, Wolfgang; Buchel, Karl H.; Timmler, Helmut; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,309,434, Cl. 424-269.000.
Tippins, George W., to Tippins Machinery Company, Inc. Method for modernizing a hot strip mill. 4,308,739, Cl. 72-229.000.
Tippins Machinery Company, Inc.: *See—*
Tippins, George W., 4,308,739, Cl. 72-229.000.
Toho Beslon Co., Ltd.: *See—*
Minamisawa, Tsuyoshi; and Nohara, Keitsugu, 4,309,473, Cl. 428-292.000.
Toida, Hiroshi; and Koishi, Masumi, to Kabushiki Kaisha Kishohin Kagaku Kaiho Kenkyusho. Skin cleansing preparation. 4,309,411, Cl. 424-63.000.
Tokuda, Hiroastu; Konno, Akihiko; and Suda, Seiji, to Hitachi, Ltd. Electronic engine control apparatus. 4,309,759, Cl. 364-431.050.
Tokuoka, Yasumichi, to TDK Electronics Co., Ltd. Process for producing SiO_2coated iron oxide powder for use in the preparation of acicular magnetic iron or iron oxide powder. 4,309,459, Cl. 427-219.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Andow, Fumio; Knodow, Ryotaro; and Okamoto, Eiichi, 4,309,767, Cl. 371-24.000.
Ito, Teruhiko; and Takahashi, Haruo, 4,309,652, Cl. 323-357.000.
Mikogami, Yukihiro; Ito, Takeo; and Wada, Moriyasu, 4,309,512, Cl. 525-58.000.
Momose, Kenichiro; Kumagai, Kiyoshi; and Mori, Fumio, 4,309,489, Cl. 428-619.000.
Morishita, Takashi, 4,309,647, Cl. 318-721.000.
Okado, Chihiro, 4,309,751, Cl. 363-138.000.
Shibata, Tadashi, 4,309,224, Cl. 148-1.500.
Wakatsuki, Tadashi; and Takahara, Takeshi, 4,309,481, Cl. 428-403.000.
Tolgyesi, Laszlo: *See—*
Forro, Dezso; Balogh, Dezso; Csaszar, Laszlo; Tolgyesi, Laszlo; and Havalda, Endre, 4,309,748, Cl. 363-65.000.
Tolmie, Robert J., Jr., to Pitney Bowes Inc. Charge roller system for an electrophotographic copier. 4,309,737, Cl. 361-225.000.
Tomabechi, Hideo, to Olympus Optical Co., Ltd. Changeover mechanism for the magnetic heads or pinch rollers of an automatic reverse tape recorder. 4,309,733, Cl. 360-105.000.
Tomek, Ivan V. Parlor checkerboard game. 4,309,037, Cl. 273-261.000.
Tomisawa, Setuso: *See—*
Ishikawa, Akira; Ishida, Yukihito; Ikegami, Shiro; Satoh, Hiroshi; Sato, Ryuichi; Tomisawa, Setuso; and Toyoshima, Shigeru, 4,309,412, Cl. 424-78.000.
Tomitani, Takehiro: *See—*
Tanaka, Eiichi; Nohara, Norimasa; Tomitani, Takehiro; Ishimatsu, Kenji; and Takami, Katsumi, 4,309,611, Cl. 250-363.00S.
Tomko, Steven M. Martial arts striking machine. 4,309,029, Cl. 272-76.000.
Tomori, Yasumasa, to Asahi Kogaku Kogyo Kabushiki Kaisha. Lens barrel capable of automatic and manual focalizing operations. 4,309,077, Cl. 350-255.000.
Tomy Kogyo Co., Inc.: *See—*
Ikeda, Masaki, 4,308,686, Cl. 46-129.000.
Matsumoto, Takao, 4,309,034, Cl. 273-86.00D.
Toray Industries, Inc.: *See—*
Kitagawa, Takao; Abiko, Shigeo; and Kamaishi, Tadami, 4,308,799, Cl. 101-457.000.
Toyo Seikan Kaisha, Ltd.: *See—*
Ishibashi, Kazuhisa, 4,309,586, Cl. 219-10.770.
Toyo Soda Mfg. Co. Ltd.: *See—*
Kubo, Masashige; Nonaka, Yuji; and Kihara, Keiichi, 4,309,341, Cl. 260-112.50R.
Toyoda, Kazuhiro, to Fujitsu Limited. Semiconductor memory apparatus. 4,309,762, Cl. 365-179.000.
Toyoshima, Shigeru: *See—*
Ishikawa, Akira; Ishida, Yukihito; Ikegami, Shiro; Satoh, Hiroshi; Sato, Ryuichi; Tomisawa, Setuso; and Toyoshima, Shigeru, 4,309,412, Cl. 424-78.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Hiramatsu, Eizi; Nakagawa, Yasushi; and Sato, Hidenori, 4,308,840, Cl. 123-519.000.
Nakano, Jiro; Ono, Hironobu; and Miyagi, Hideo, 4,308,838, Cl. 123-492.000.
Nohira, Hidetaka; Konomi, Toshiaki; and Matsui, Hideaki, 4,308,837, Cl. 123-442.000.
Okumura, Takeshi; and Ikeda, Hiroshi, 4,308,832, Cl. 123-306.000.
Yamada, Norimasa; Iwashita, Yoshihiro; Okada, Masanori; and Kanome, Yoshihiro, 4,308,829, Cl. 123-188.00M.
Yamada, Norimasa; Iwashita, Yoshihiro; Okada, Masanori; and Kanome, Yoshihiro, 4,308,830, Cl. 123-188.00M.
Treherne, Elezabeth J.: *See—*
Pathak, Ram D.; and Treherne, Elezabeth J., 4,309,408, Cl. 424-44.000.
Trio Kabushiki Kaisha: *See—*
Naito, Michinori, 4,309,649, Cl. 323-212.000.
Trod, Ernest. Chemical analysis cuvette. 4,309,384, Cl. 422-64.000.
TRW, Inc.: *See—*
Merz, Kenneth M.; and Wesson, Laurence N., 4,309,689, Cl. 338-42.000.
Warren, Walter B., 4,309,734, Cl. 361-58.000.
Tsuchiya, Shuichi: *See—*
Takaishi, Naotake; Urata, Kouichi; Inamoto, Yoshiaki; Okamoto, Kikuhiko; and Tsuchiya, Shuichi, 4,309,448, Cl. 424-365.000.
Tsuprov, Sergei A.: *See—*
Chukhanov, Zinovy F.; Chukhanov, Zinovy Z.; Tsuprov, Sergei A.; Samsonov, Vladimir I.; and Karasev, Vadim A., 4,309,197, Cl. 48-197.00R.
Tsuruoka, Takashi: *See—*
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,309,208, Cl. 71-86.000.
Tsutsumi, Hisao; Abe, Yoshiaki; Inoue, Shigeo; and Ishida, Atsuo, to Kao Soap Co., Ltd. Skin-protecting cosmetic composition. 4,309,447, Cl. 424-361.000.
Tucci, John J.: *See—*
Sizemore, Ronald D.; Tucci, John J.; and Willette, Albert D., 4,309,370, Cl. 264-40.500.
Tuin, Hermanus N.: *See—*
Klop, Marius A. F.; Meerman, Wilhelmus C. P. M.; Peelen, Jan G. J.; and Tuin, Hermanus N., 4,309,201, Cl. 65-2.000.
Tukamoto, Susumu: *See—*
Hashimoto, Tatsuya; Inagaki, Michio; Irie, Hirosada; and Tukamoto, Susumu, 4,309,589, Cl. 219-121.0ED.
Tumerman, Leo. Method and apparatus for measuring the quantities which characterize the optical properties of substances. 4,309,110, Cl. 356-365.000.

Tunkers Maschinenbau GmbH: *See—*
Boguth, Kurt, 4,308,924, Cl. 173-135.000.
Tweeddale, Andrew D., to United States of America, Air Force. Cable protection from rodents. 4,309,072, Cl. 350-96.230.
Twin Disc, Incorporated: *See—*
Condon, William T., 4,308,729, Cl. 64-23.000.
Tworek, John L.; and Rignel, Gordon R., to Kennecott Corporation. Process for manufacturing boron nitride fiber batts using a spinner. 4,309,203, Cl. 65-4.100.
Tworek, John L.; and Rignel, Gordon R., to Kennecott Corporation. Process for manufacturing boron nitride fiber mats. 4,309,244, Cl. 162-102.000.
Tworek, John L.; and Rignel, Gordon R., to Kennecott Corporation. Process for manufacturing boron nitride fiber felt using a Fourdrinier machine. 4,309,245, Cl. 162-102.000.
Tworek, John L.; and Rignel, Gordon R., to Kennecott Corporation. Process for manufacturing boron nitride fiber mats using calender rolls. 4,309,248, Cl. 162-157.00R.
Tyler, Ralph J.; Smith, Ian W.; and Edwards, James H., to Commonwealth Scientific and Industrial Research Organization. Flash pyrolysis of agglomerating coal. 4,309,270, Cl. 208-8.00R.
Tyler Refrigeration Corporation: *See—*
Bowen, E. Lee, 4,308,975, Cl. 222-36.000.
Perez, Arthur; and Abraham, Fayez F., 4,308,726, Cl. 62-256.000.
Uchida, Yasuo; Yagi, Michio; and Shiozawa, Kazuo, to Konishiroku Photo Industry Co., Ltd. Film magazine having an identity mark for identifying sensitivity of the film and a camera therefor. 4,309,088, Cl. 354-21.000.
Uchigasaki, Isao: *See—*
Obara, Mitsuo; Kageyama, Akira; and Uchigasaki, Isao, 4,309,519, Cl. 525-445.000.
Uchiyama, Yasuji: *See—*
Suzuki, Hideo; Itakura, Kenji; and Uchiyama, Yasuji, 4,308,779, Cl. 84-1.190.
Udipi, Kishore, to Phillips Petroleum Company. Hydrocarbyl esters of N-cyclopropyl-N-hydrocarbylcarbamic acids as coupling agents for conjugated diene polymerizations. 4,309,517, Cl. 525-374.000.
Ueda, Shigeru: *See—*
Kanoto, Masanobu; and Ueda, Shigeru, 4,309,591, Cl. 219-216.000.
Ueda, Takashi: *See—*
Ito, Yoshifumi; Nishimoto, Yoshihiko; Taoda, Kiyomichi; Sato, Fumiaki; Ueda, Takashi; and Uehara, Seibi, 4,308,668, Cl. 34-30.000.
Ueda, Yasuo; Kagitani, Yoshio; Sako, Eiji; Suyama, Tadakazu; Komatsu, Nobuhiko; and Satoh, Daisuke, to Green Cross Corporation, The. Pyrrolo-benzodiazepine compounds and anti-tumor composition thereof. 4,309,437, Cl. 424-274.000.
Uede, Hisashi: *See—*
Yano, Kohzo; Takechi, Sadatoshi; Inami, Yasuhiko; and Uede, Hisashi, 4,308,658, Cl. 29-570.000.
Uehara, Seibi: *See—*
Ito, Yoshifumi; Nishimoto, Yoshihiko; Taoda, Kiyomichi; Sato, Fumiaki; Ueda, Takashi; and Uehara, Seibi, 4,308,668, Cl. 34-30.000.
Uemura, Toshio; Watanabe, Yoshiki; Masumoto, Yoji; Ishikawa, Tomihisa; Kajimoto, Noboru; and Kawada, Shin, to Babcock-Hitachi Kabushiki Kaisha. Incinerator for burning waste and a method of utilizing same. 4,308,806, Cl. 110-244.000.
Ueno, Katsuji; Inoue, Haruo; and Furuta, Akihiro, to Sumitomo Chemical Company, Limited. Novel resin compositions based on polyphenylene ether. 4,309,513, Cl. 525-68.000.
Ueno, Masayasu; Yonezu, Hiroo; and Lang, Roy, to Nippon Electric Co., Ltd. Stripe-geometry double heterojunction laser device. 4,309,668, Cl. 331-94.50H.
Ueno, Yoshio; and Inohara, Masanobu, to Asics Corporation. Method for producing a shoe sole. 4,309,376, Cl. 264-241.000.
Uffner, Melville W.: *See—*
Jefferson, Donald E.; Coe, Charles G.; Beitchman, Burton D.; and Uffner, Melville W., 4,309,511, Cl. 525-14.000.
Ukita, Ryoji; and Hirayama, Takao, to Hitachi Chemical Company Ltd. Copolymer emulsion. 4,309,330, Cl. 260-29.70H.
Ulin, Carl O., to U.S. Philips Corporation. Chaff ejecting device. 4,309,705, Cl. 343-18.00E.
Ultra High Vacuum Instruments Ltd.: *See—*
Robinson, James E.; Pant, Aniket; and Legg, Roger C., 4,308,756, Cl. 73-863.850.
Umano, Yasuhiro: *See—*
Nagai, Shunichi; and Umano, Yasuhiro, 4,309,696, Cl. 340-515.000.
Union Carbide Corporation: *See—*
Baskent, Feyyaz O.; and Prokai, Bela, 4,309,508, Cl. 521-112.000.
Hill, Clifford W., 4,309,588, Cl. 219-75.000.
Merkert, Rodney F., 4,309,216, Cl. 75-256.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Samuel, Glyndwr T., 4,308,785, Cl. 89-4.00B.
United States Gypsum Company: *See—*
O'Neill, Eugene, 4,309,391, Cl. 423-172.000.
United States of America
Air Force: *See—*
Smith, Kenneth L., 4,309,106, Cl. 356-121.000.
Tweeddale, Andrew D., 4,309,072, Cl. 350-96.230.
Army: *See—*
Adamson, James R., Jr.; and Jenkins, Donald H., 4,309,608, Cl. 250-330.000.
Patrick, E. Vincent; Dickson, Howard K.; and Dunmire, Howard L., 4,309,066, Cl. 316-19.000.
Energy: *See—*
Bradley, John G., 4,309,250, Cl. 376-310.000.
Carlson, Richard S., 4,309,230, Cl. 149-109.600.
Christophorou, Loucas G.; McCorkle, Dennis L.; Maxey, David V.; and Carter, James G., 4,309,307, Cl. 252-372.000.
Kovach, Louis; and Holcombe, Cressie E., 4,309,467, Cl. 428-36.000.
Robinson, Paul R.; and Bamberger, Carlos E., 4,309,403, Cl. 423-648.00R.
Salvador, Louis A.; Andermann, Ronald E.; and Rath, Lawrence K., 4,309,194, Cl. 48-76.000.
Sheth, Atul C., 4,309,398, Cl. 423-428.000.
Steinberg, Meyer; Powell, James R.; Takahashi, Hiroshi; Grand, Pierre; and Kouts, Herbert, 4,309,249, Cl. 376-192.000.
Steinman, David A., 4,308,750, Cl. 73-432.0PS.
Weitl, Frederick L.; and Raymond, Kenneth N., 4,309,305, Cl. 252-631.000.
National Aeronautics and Space Administration: *See—*
Hein, Leopold A.; and Myers, William N., 4,309,146, Cl. 415-2.00R.
Irick, Stephen C., 4,309,039, Cl. 277-1.000.
Jhabvala, Murzban D., 4,308,868, Cl. 128-421.000.
Sheibley, Dean W., 4,309,372, Cl. 264-45.300.
Navy: *See—*
Anderson, Warren A., 4,309,704, Cl. 343-18.00E.
Blodgett, Jerry A.; and Patten, Raymond A., 4,309,109, Cl. 356-355.000.
Johnson, George B.; and Clapp, Gerald A., 4,309,773, Cl. 455-62.000.
Lebduska, Robert L., 4,309,105, Cl. 356-73.100.
Mosko, Joseph A., 4,309,706, Cl. 343-100.00R.
Olson, Jack R., 4,308,753, Cl. 73-861.170.
U.S. Philips Corporation: *See—*
Bloot, Pieter C.; and van Kleef, Johannes H. K. C., 4,309,669, Cl. 331-94.50D.
Cassel, Knut E., 4,309,710, Cl. 343-754.000.
Hill, Bernhard, 4,309,084, Cl. 350-377.000.
Klop, Marius A. F.; Meerman, Wilhelmus C. P. M.; Peelen, Jan G. J.; and Tuin, Hermanus N., 4,309,201, Cl. 65-2.000.
Kowalski, Gunter, 4,309,615, Cl. 250-445.00T.
McSweeney, Robert T., 4,309,295, Cl. 252-62.3BT.
Sanderson, Hendrik J., 4,309,730, Cl. 360-77.000.
Slatter, John A. G., 4,309,714, Cl. 357-22.000.
Te Velde, Ties S., 4,309,242, Cl. 156-644.000.
Ulin, Carl O., 4,309,705, Cl. 343-18.00E.
van Laarhoven, Aloysius M. M., 4,309,166, Cl. 431-358.000.
van Oirschot, Theodorus G. J.; Nijman, Willem; and Fougeres, Marc P. A., 4,308,820, Cl. 118-412.000.
Van Roosmalen, Johannes H. T.; and De Haas, Franciscus C. M., 4,309,638, Cl. 313-447.000.
Wagner, Wolfgang, 4,309,614, Cl. 250-445.00T.
United Technologies Corporation: *See—*
Stack, Timothy F.; and Calcasola, Richard W., 4,309,653, Cl. 323-369.000.
United Wire & Supply Corporation: *See—*
Baker, Ellery L., 4,308,744, Cl. 72-402.000.
Universal Medical Instrument Corporation: *See—*
Young, Ruperto S., 4,308,875, Cl. 128-753.000.
University of Chicago, The: *See—*
Fried, Josef, 4,309,351, Cl. 260-340.90P.
University of Delaware: *See—*
Austin, Paul R., 4,309,534, Cl. 536-20.000.
University of Southern California: *See—*
Jelliffe, Roger W.; and Crone, Jack D., 4,308,866, Cl. 128-214.00E.
University of Sydney: *See—*
Harding, Geoffrey L.; McKenzie, David R.; Window, Brian; and Collins, Anthony R., 4,309,261, Cl. 204-192.00R.
University of Virginia Alumni Patents Foundation: *See—*
Dodge, William B., III; and Allen, Ralph O., 4,309,187, Cl. 23-232.00E.
UOP Inc.: *See—*
Barley, Geoffrey W., 4,309,058, Cl. 297-284.000.
O'Hara, Mark J.; and Johnson, Russell W., 4,309,277, Cl. 208-111.000.
Roberts, John T., 4,309,294, Cl. 252-51.50R.
Vickers, Anthony G., 4,309,308, Cl. 252-417.000.
Uozumi, Yasuji: *See—*
Watanabe, Masao; Goto, Osamu; and Uozumi, Yasuji, 4,308,842, Cl. 123-520.000.
Upjohn Company, The: *See—*
Birkenmeyer, Robert D., 4,309,533, Cl. 536-11.000.
Urata, Kouichi: *See—*
Takaishi, Naotake; Urata, Kouichi; Inamoto, Yoshiaki; Okamoto, Kikuhiko; and Tsuchiya, Shuichi, 4,309,448, Cl. 424-365.000.
Utner, Ferdinand; and Vetter, Harald, to Siemens Aktiengesellschaft. Resistance strain gauge. 4,309,687, Cl. 338-2.000.
Uwai, Toshihiro: *See—*
Sato, Akihiro; Kikuta, Kazutsune; Matsuda, Kenji; Uwai, Toshihiro; and Hanari, Tohru, 4,309,521, Cl. 526-114.000.
Uzorovsky, Efim L.: *See—*
Lisitsa, Evgeny I.; Gursky, Alexandr M.; Kuimov, Vitaly G.; Makazan, Jury S.; Paulsky, Alexandr V.; Reznichenko, Fedor A.; Romanov, Alexandr V.; and Uzorovsky, Efim L., 4,308,745, Cl. 72-453.180.

Vadas, Leslie, to FMC Corporation. Container filling system. 4,308,900, Cl. 141-1.000.
Valco, Thomas D., to International Harvester Company. Recutter screen baffle. 4,308,997, Cl. 241-47.000.
Valente, Paolo: *See*—
Piloni, Taddeo; and Valente, Paolo, 4,308,789, Cl. 99-289.00R.
Valitsky, Robert A., to Loctite Corporation. Thermally-resistant glass-filled adhesive/sealant compositions. 4,309,334, Cl. 260-42.150.
Van Doorne's Transmissie B.V.: *See*—
Cadee, Theodorus P. M., 4,308,940, Cl. 192-103.0FA.
Van Ausdal, Robert K., to Bendix Corporation, The. Rotary valve. 4,308,892, Cl. 137-625.230.
van Bogaert, Joseph R., to American Air Filter Company, Inc. Gas damper. 4,308,887, Cl. 137-112.000.
Van Drie, Gerhardt. Refuse-extruder-and-compactor apparatus. 4,309,141, Cl. 414-509.000.
Van Huffel, Phillip L.; and Bodner, Alex A. Wax applicator laminate. 4,308,633, Cl. 15-104.930.
van Kleef, Johannes H. K. C.: *See*—
Bloot, Pieter C.; and van Kleef, Johannes H. K. C., 4,309,669, Cl. 331-94.50D.
van Laarhoven, Aloysius M. M., to U.S. Philips Corporation. Combustion flashbulb. 4,309,166, Cl. 431-358.000.
van Mi, Martinus P. G., to Stork PMT B.V. Apparatus for removing the vertical vertebrae from the neck of slaughtered fowls. 4,308,639, Cl. 17-11.000.
Van Ness, David; Hines, Joseph; and Wells, William E. Non-corrosive, non-staining evaporative cooler. 4,309,365, Cl. 261-29.000.
van Oirschot, Theodorus G. J.; Nijman, Willem; and Fougeres, Marc P. A., to U.S. Philips Corporation. Apparatus for epitaxial crystal growth from the liquid phase. 4,308,820, Cl. 118-412.000.
Van Roosmalen, Johannes H. T.; and De Haas, Franciscus C. M., to U.S. Philips Corporation. Electron gun cathode support. 4,309,638, Cl. 313-447.000.
Vansteelant, Marc G., to Sperry Corporation. Knotter apparatus with shearplate for rotary knife. 4,309,051, Cl. 289-2.000.
Van Uitert, LeGrand G.: *See*—
Camlibel, Irfan; Singh, Shobha; Van Uitert, LeGrand G.; and Zydzik, George J., 4,309,081, Cl. 350-357.000.
Singh, Shobha; Van Uitert, LeGrand G.; and Zydzik, George J., 4,309,460, Cl. 427-250.000.
Van Wyk, Jacobus P.: *See*—
Bout, Bernardus J.; and Van Wyk, Jacobus P., 4,309,663, Cl. 328-132.000.
Varona, Eugenio G., to Scott Paper Company. Flushable binder system for pre-moistened wipers wherein an adhesive for the fibers of the wipers interacts with ions contained in the lotion with which the wipers are impregnated. 4,309,469, Cl. 428-74.000.
Varta Batterie Aktiengesellschaft: *See*—
Kuhl, Thomas; and Sauer, Hans, 4,309,493, Cl. 429-172.000.
Vater, Richard A.; and Terlesky, John, to Pittsburgh-Des Moines Corporation. Protection ring for limiting the width of cracks in a storage tank wall. 4,308,967, Cl. 220-71.000.
Vaughan, David E. W.: *See*—
Barrett, Michael G.; and Vaughan, David E. W., 4,309,313, Cl. 252-455.00Z.
Vaughn, George A.: *See*—
Parker, Charles L., Jr.; and Vaughn, George A., 4,309,033, Cl. 273-73.00D.
Vaughn, Howard A., Jr., to General Electric Company. Silicone resin coating composition. 4,309,319, Cl. 260-9.000.
VEB Gaskombinat Schwarze Pumpe: *See*—
Girodi, Erich; Richter, Gerhard; Neumann, Berthold; Jaschke, Peter; Slabik, Johannes; Weber, Roland; Schmidt, Andrea; Krieg, Peter; Groschel, Lutz; Heynisch, Joachim; Starke, Joachim; Wienold, Dietrich; Scholz, Gunter; and Monch, Eckehard, 4,309,193, Cl. 48-66.000.
Velenyi, Louis J.: *See*—
Shaw, Wilfrid G.; Paparizos, Christos; and Velenyi, Louis J., 4,309,392, Cl. 423-239.000.
Velsicol Chemical Corporation: *See*—
Stach, Leonard J.; and Wilke, Robert N., 4,309,422, Cl. 424-211.000.
Vereinigte Baubeschlagfabriken Gretsch & Co., GmbH: *See*—
Schmidt, Manfred, 4,309,044, Cl. 280-615.000.
Verronmay Limited: *See*—
Horrobin, David F., 4,309,415, Cl. 424-85.000.
Vetter, Harald: *See*—
Utner, Ferdinand; and Vetter, Harald, 4,309,687, Cl. 338-2.000.
Vickers, Anthony G., to UOP Inc. Fluid catalyst regeneration process and apparatus. 4,309,308, Cl. 252-417.000.
Vidal, Frederick D.; and Jayaraman, Anantharaman, to Pennwalt Corporation. Liquid antimicrobial treatment for storage grain. 4,309,451, Cl. 426-331.000.
Vikhlyaev, Alexandr A.; Nosikov, Georgy M.; Semenov, Nikolai I.; and Fedulov, Alexandr I. Impact device. 4,308,922, Cl. 173-18.000.
Vikio, Pentti; Lankinen, Matti; and Kyytsonen, Juhani, to Enso-Gutzeit Osakeyhtio. Hydrocyclone. 4,309,283, Cl. 209-211.000.
Vilcsek, Herbert: *See*—
Herbrechtsmeier, Peter; Steiner, Rudolf; and Vilcsek, Herbert, 4,309,396, Cl. 423-393.000.
Vincze, Janos: *See*—
Lacroix, Roger; Adam, Jean-Marie; and Vincze, Janos, 4,309,180, Cl. 8-609.000.
Viola, Olivo L., to General Electric Company. Cooling air seal. 4,309,145, Cl. 415-170.00R.
Vits, Hilmar, to Vits Maschinenbau GmbH. Jet-conveyor box for floatingly guiding a conveyed strip or sheet material. 4,308,984, Cl. 226-97.000.
Vits Maschinenbau GmbH: *See*—
Vits, Hilmar, 4,308,984, Cl. 226-97.000.
Voellmy, Rudolf: *See*—
Frey, Raymond; and Voellmy, Rudolf, 4,309,757, Cl. 364-416.000.
Voigtlander, Otto; and Mages, Walter, to Thyssen Industrie AG. Heavy load capability gear wheel. 4,308,760, Cl. 74-459.500.
Volk, Heinrich: *See*—
Becker, Werner; Holland-Letz, Gunter; and Volk, Heinrich, 4,308,797, Cl. 101-292.000.
Volkswagenwerk Aktiengesellschaft: *See*—
Heinz, Otto; Hoppmann, Helmut; and Henning, Bodo, 4,309,155, Cl. 417-360.000.
Vollhardt, Frohmut, to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Coal gasification apparatus. 4,309,196, Cl. 48-77.000.
Von Holdt, John W. Plastic bucket defining annular inwardly projecting ridge. 4,308,970, Cl. 220-306.000.
von Ow, Hans P.: *See*—
Mueller, Helmut; von Ow, Hans P.; Rambold, Thomas; and Werres, Bernhard, 4,309,765, Cl. 370-99.000.
Voorhees, Donna S. Disposable fluid-tight ear protector. 4,308,623, Cl. 2-174.000.
Vorwerk & Co. Interholding GmbH: *See*—
Ahlf, Heinz-Jurgen; and Strohmeyer, Rolf, 4,309,048, Cl. 285-7.000.
Vosper Thornycroft (UK) Limited: *See*—
Moore, John P., 4,308,826, Cl. 122-4.00D.
W. R. Grace & Co.: *See*—
Barrett, Michael G.; and Vaughan, David E. W., 4,309,313, Cl. 252-455.00Z.
Wood, Louis L., 4,309,509, Cl. 521-132.000.
Waagner-Biro Aktiengesellschaft: *See*—
Misik, Norbert, 4,308,899, Cl. 141-1.000.
Wacker-Chemie GmbH: *See*—
Huber, Peter; August, Peter; Lampelzammer, Helga; and Primas, Willi, 4,309,478, Cl. 428-391.000.
Wada, Moriyasu: *See*—
Mikogami, Yukihiro; Ito, Takeo; and Wada, Moriyasu, 4,309,512, Cl. 525-58.000.
Wada, Tetsuo: *See*—
Kubo, Isao; Nagayoshi, Shigemi; Sakata, Futao; Wada, Tetsuo; and Oi, Shoichi, 4,309,192, Cl. 44-51.000.
Wafer, John A.; Ricci, Louis N.; and Maier, Alfred E., to Westinghouse Electric Corp. Dual arcing contacts for circuit breaker. 4,309,580, Cl. 200-144.00R.
Wagner, Karl: *See*—
Stemme, Otto; Lermann, Peter; Wagner, Karl; Engelsmann, Dieter; and Schroder, Rolf, 4,309,097, Cl. 354-173.000.
Wagner, Rudolf, to Rems-Werk Christian Foll und Sohne GmbH & Co. Ratchet lever. 4,308,768, Cl. 81-60.000.
Wagner, Wolfgang, to U.S. Philips Corporation. Device for computed tomography. 4,309,614, Cl. 250-445.00T.
Wakatsuki, Tadashi; and Takahara, Takeshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Filter-coated phosphor. 4,309,481, Cl. 428-403.000.
Walker, Ellis, Jr. Collapsible book support and organizer. 4,308,951, Cl. 206-214.000.
Wallace, Melvin W. Process for prevention of chalkbrood disease. 4,308,627, Cl. 6-12.00M.
Waller, Henry A.: *See*—
Reinicke, Robert H.; and Waller, Henry A., 4,309,022, Cl. 251-61.400.
Walser, Reimund: *See*—
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Walsh, James E., to Ralston Purina Company. Process for the production of a protein isolate having improved whiteness. 4,309,344, Cl. 260-123.500.
Walsh, Myles A. Mining method. 4,309,059, Cl. 299-11.000.
Walther, Ruedi: *See*—
Kurz, Rainer; and Walther, Ruedi, 4,309,167, Cl. 432-22.000.
Ward, Christine E., to Container Corporation of America. Dispensing carton. 4,308,957, Cl. 206-626.000.
Ward, Gary A.: *See*—
Martin, Jerry D.; Pearson, Stephen J.; Ward, Gary A.; and Winchell, David A., 4,308,904, Cl. 150-0.500.
Ward, George C., to Southwire Company. Vertical shaft furnace. 4,309,170, Cl. 432-96.000.
Wareham, Richard R.: *See*—
Bendoni, Leonard V.; and Wareham, Richard R., 4,309,100, Cl. 354-303.000.
Warner-Lambert Company: *See*—
Ciaffone, John T., 4,308,663, Cl. 30-87.000.
Hartenstein, Johannes; and Satzinger, Gerhard, 4,309,542, Cl. 546-075.000.
Warnier, Jean M. M.: *See*—
Bour, Edmond H. J. P.; Brouwers, Johannes A. L.; and Warnier, Jean M. M., 4,309,530, Cl. 528-326.000.
Warren, Walter B., to TRW Inc. Methods and apparatus for limiting electrical current to a subsea petroleum installation. 4,309,734, Cl. 361-58.000.
Washer, Stone P., to Phillips Petroleum Company. Removal of cracking catalyst fines. 4,309,273, Cl. 208-78.000.
Wasness, Donald S.: *See*—
Thrower, Herbert T., Jr.; and Wasness, Donald S., 4,309,639, Cl. 315-82.000.

Watanabe, Masao; Goto, Osamu; and Uozumi, Yasuji, to Honda Giken Kogyo Kabushiki Kaisha. Evaporative emission control system for an internal combustion engine. 4,308,842, Cl. 123-520.000.

Watanabe, Seizo: *See—*
Saitou, Sinichi; Kato, Toshikazu; Watanabe, Seizo; Nishiyama, Toyoo; Shimoda, Misao; Shibata, Tutomu; Kimura, Kenji; and Satoh, Ken, 4,309,002, Cl. 242-198.000.

Watanabe, Tetsuro: *See—*
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,309,208, Cl. 71-86.000.

Watanabe, Yoshiki: *See—*
Uemura, Toshio; Watanabe, Yoshiki; Masumoto, Yoji; Ishikawa, Tomihisa; Kajimoto, Noboru; and Kawada, Shin, 4,308,806, Cl. 110-244.000.

Watridge, Derek J.: *See—*
Ryan, Douglas G.; and Watridge, Derek J., 4,309,288, Cl. 210-39.00S.

Watson, Herman L.; Sackner, Marvin A.; and Stott, Frank D., to Respitrace Corporation. Method and apparatus for monitoring respiration. 4,308,872, Cl. 128-725.000.

Wavin B.V.: *See—*
Ettema, Ernst; and Benraad, Coenraad J. B., 4,308,966, Cl. 220-21.000.

Weatherchem Corporation: *See—*
Otterson, Lewis L., 4,308,979, Cl. 222-516.000.

Weaver, Jon N., to Sensormatic Electronics Corporation. Magnetic surveillance system with odd-even harmonic and phase discrimination. 4,309,697, Cl. 340-572.000.

Webasto-Werk W. Baier GmbH & Co.: *See—*
Panick, Karl; and Glass, Joseph, 4,309,153, Cl. 417-252.000.

Weber, Georges: *See—*
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Weber, Robert: *See—*
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Weber, Roland: *See—*
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Weghaupt, Erich: *See—*
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Wehrli, Rudolf: *See—*
Ackermann, Peter; Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; and Wehrli, Rudolf, 4,309,555, Cl. 556-417.000.

Weibelzahl, Manfred; Meusel, Wolfgang; and Schaumman, Kurt, to Siemens Aktiengesellschaft. Circuit having improved firing angle symmetry for ignition pulses in the control of a multipulse rectifier. 4,309,749, Cl. 363-87.000.

Weidemuller, Wolf: *See—*
Daniek, Georg; Meyer, Artur; and Weidemuller, Wolf, 4,309,178, Cl. 8-551.000.

Weis, Siegfried K., to C. L. Frost & Son, Inc. Bearing seal. 4,309,063, Cl. 308-187.200.

Weiss, Sidney M., to Sleep Knit Corporation. Fitted top sheet. 4,308,626, Cl. 5-485.000.

Weissmann, Gerd F. H.: *See—*
Carter, Herman L., Jr.; Hart, Robert R.; and Weissmann, Gerd F. H., 4,309,618, Cl. 250-561.000.

Weitl, Frederick L.; and Raymond, Kenneth N., to United States of America, Energy. In vitro removal of actinide (IV) ions. 4,309,305, Cl. 252-631.000.

Wella Aktiengesellschaft: *See—*
Sigmund, Ludwig; Golzer, Norbert; and Steigerwald, Franz, 4,308,977, Cl. 222-320.000.

Wells, William E.: *See—*
Van Ness, David; Hines, Joseph; and Wells, William E., 4,309,365, Cl. 261-29.000.

Wen, Chen-Jiing: *See—*
Lin, Jih-Shyan; Lin, Wuu-Shyong; Chen, Kwei-Lin; and Wen, Chen-Jiing, 4,308,889, Cl. 137-187.000.

Wendling, Larry A., to Minnesota Mining and Manufacturing Company. Water-dispersible energy curable heterocyclic group-containing polyesters. 4,309,529, Cl. 528-289.000.

Werner, John A.: *See—*
Wilson, Charles A.; and Werner, John A., 4,309,548, Cl. 546-345.000.

Werner, Lincoln H., to Ciba-Geigy Corporation. Piperidinyl-lactams. 4,309,541, Cl. 546-16.000.

Werres, Bernhard: *See—*
Mueller, Helmut; von Ow, Hans P.; Rambold, Thomas; and Werres, Bernhard, 4,309,765, Cl. 370-99.000.

Werthmann, Paul E. Compound clamp. 4,309,120, Cl. 403-18.000.

Wesson, Laurence N.: *See—*
Merz, Kenneth M.; and Wesson, Laurence N., 4,309,689, Cl. 338-42.000.

Western Electric Company, Inc.: *See—*
Bohannon, William D., Jr., 4,308,662, Cl. 29-828.000.

Westhead, William T., to Scapa Dryers, Inc. Dryer felt with encapsulated, bulky center yarns. 4,308,897, Cl. 139-383.00A.

Westinghouse Electric Corp.: *See—*
Caputo, William R.; and De Lorenzi, John J., 4,308,936, Cl. 187-29.00R.
Grunert, Kurt A.; Dauer, John J., Jr.; and DeVault, Birch L., 4,309,683, Cl. 335-132.000.
Koroly, James S.; and Sexton, Robert M., 4,309,634, Cl. 310-201.000.
Litz, Donald C., 4,309,621, Cl. 290-52.000.
Petro, John, 4,309,169, Cl. 432-64.000.
Stacey, Eric J., 4,309,752, Cl. 363-160.000.
Stol, Israel, 4,309,590, Cl. 219-137.620.
Wafer, John A.; Ricci, Louis N.; and Maier, Alfred E., 4,309,580, Cl. 200-144.00R.

Wexell, Dale R.: *See—*
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Flannery, James E.; Stempin, John L.; and Wexell, Dale R., 4,309,219, Cl. 501-32.000.

Whatman Reeve Angel Limited: *See—*
Head, Brian A., 4,309,289, Cl. 210-649.000.

White, LeRoy A.: *See—*
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Whitehead, Valerie B.: *See—*
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Widmann, Horst: *See—*
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Wiegand, John R., to Echlin Manufacturing Company, The. Pulse generation by changing magnetic field. 4,309,628, Cl. 307-419.000.

Wienold, Dietrich: *See—*
Girodi, Erich; Richter, Gerhard; Neumann, Berthold; Jaschke, Peter; Slabik, Johannes; Weber, Roland; Schmidt, Andrea; Krieg, Peter; Groschel, Lutz; Heynisch, Joachim; Starke, Joachim; Wienold, Dietrich; Scholz, Gunter; and Monch, Eckehard, 4,309,193, Cl. 48-66.000.

Wikel, James H., to Eli Lilly and Company. Conversion of benzimidazole isomers. 4,309,258, Cl. 204-158.00R.

Wildonger, Kenneth J.: *See—*
Christensen, Burton G.; Leanza, William J.; and Wildonger, Kenneth J., 4,309,438, Cl. 424-274.000.

Wilke, Robert N.: *See—*
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Wilkens, Mark W., to Farinon Corporation. Digital radio transmission system. 4,309,771, Cl. 375-58.000.

Wilkinson, Charles E. Manifold for rotary engines. 4,308,836, Cl. 123-44.00D.

Wilks, Howard G., to Gould Inc. Electric fuse having large cycling ability and gas-evolving means. 4,309,684, Cl. 337-273.000.

Willette, Albert D.: *See—*
Sizemore, Ronald D.; Tucci, John J.; and Willette, Albert D., 4,309,370, Cl. 264-40.500.

Williams, Donald F.; and Phy, Charles L. Apparatus for forming paper boxes and the like. 4,308,709, Cl. 53-207.000.

Williams, Eugene E.: *See—*
Noyes, Ronald T.; and Williams, Eugene E., 4,308,669, Cl. 34-33.000.

Williams, Richard L. Method and apparatus for removing deflection from plastic pipes. 4,309,128, Cl. 405-154.000.

Williamson, Michael, to Owens-Corning Fiberglas Corporation. Furnace forehearth electrode groups having less than 90° phase difference between adjacent groups. 4,309,567, Cl. 13-6.000.

Willingham, Wendell D., to Owens-Illinois, Inc. Closure pre-tightener for closure applicating machines. 4,308,707, Cl. 53-314.000.

Wills, David C.; Lawter, Raymond L.; Briggs, Barry D.; and Sampson, Edward F., to NCR Corporation. Low energy impact printer. 4,308,795, Cl. 101-93.370.

Wilmeth, Claude H., to N-S-W Corporation. Stud wrench. 4,308,767, Cl. 81-57.390.

Wilson, Charles A., to Dow Chemical Company, The. Substituted benzylidene methylhydrazides of acetic acid, their bactericidal and fungicidal use, and method of preparation. 4,309,440, Cl. 424-304.000.

Wilson, Charles A.; and Werner, John A., to Dow Chemical Company, The. Chlorination of 2-chloro-5-trichloromethylpyridine. 4,309,548, Cl. 546-345.000.

Wilson, James D. Plastic nestable-stackable receptacle. 4,308,954, Cl. 206-505.000.

Winchell, David A.: *See—*
Martin, Jerry D.; Pearson, Stephen J.; Ward, Gary A.; and Winchell, David A., 4,308,904, Cl. 150-0.500.

Windle, William K. Tool holder for chucker lathe. 4,308,771, Cl. 82-36.00R.

Window, Brian: *See—*
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Winkelmann, Johannes: *See—*
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Wion, Donald A.: *See—*
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Wirt, Thomas M.: *See—*
McNair, Fred; and Wirt, Thomas M., 4,309,107, Cl. 356-350.000.

Witherspoon, Phillip L., to Long Mile Rubber Company. Tire retreading envelope seal. 4,309,234, Cl. 156-96.000.

Wittersheim, Adam, to Goldwell GmbH, Chemische Fabrik H.E. Dotter. Applicator device for cosmetic preparations. 4,309,119, Cl. 401-188.00R.

Wittig, Andreas: *See—*
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Wittkus, Heinz: *See—*
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Woebcke, Herman N.: *See—*
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Wojick, Victor E. Safety dowel guard and method of use. 4,308,701, Cl. 52-244.000.

Wolberg, Gerald; and Zimmerman, Thomas P., to Burroughs Wellcome Co. Method for the inhibition of immune response. 4,309,419, Cl. 424-180.000.

Wolfe, Warren D.: *See—*
Jenson, Clark E.; and Wolfe, Warren D., 4,308,689, Cl. 47-57.500.

Wolff, Friedrich. Apparatus for producing ultraviolet radiation. 4,309,616, Cl. 250-494.000.

Wood, Louis L., to W. R. Grace & Co. Odorant hydrophilic foam compositions. 4,309,509, Cl. 521-132.000.

Wood, Prentice J., to Mead Corporation, The. Article carrier. 4,308,950, Cl. 206-188.000.

Wood, Richard J., to Eiger Engineering Limited. Milling, mixing or dispersing apparatus. 4,308,998, Cl. 241-101.00B.

Woodhull, Ivan D., Jr., to Karmazin Products Corporation. Heat exchanger construction. 4,308,652, Cl. 29-157.400.

Woods, Maurice G. Solid waste disposal system. 4,308,809, Cl. 110-346.000.

Woodworth, Larry A.: *See—*
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World Health Organization: *See—*
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Wurtman, Richard J.; and Wurtman, Judith J., to Massachusetts Institute of Technology. d-Fenfluramine for modifying feeding behavior. 4,309,445, Cl. 424-325.000.

Xerox Corporation: *See—*
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Yagi, Hikaru: *See—*
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Yagi, Michio: *See—*
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Yamada, Norimasa; Iwashita, Yoshihiro; Okada, Masanori; and Kanome, Yoshihiro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Vane in the inlet passage of an internal combustion engine. 4,308,829, Cl. 123-188.00M.

Yamada, Norimasa; Iwashita, Yoshihiro; Okada, Masanori; and Kanome, Yoshihiro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Vane in the inlet passage of an internal combustion engine. 4,308,830, Cl. 123-188.00M.

Yamada, Seiji, to Minolta Camera Kabushiki Kaisha. Exposure indicating device. 4,309,090, Cl. 354-31.000.

Yamada, Shigeki: *See—*
Chibata, Ichiro; Yamada, Shigeki; and Hongo, Chikara, 4,309,362, Cl. 260-501.120.

Yamaguchi, Yoshiharu; and Horikawa, Mitsuo, to Yoshida Kogyo K.K. Slide fastener tape. 4,308,898, Cl. 139-384.00B.

Yamashiro, Osamu, to Hitachi, Ltd. Complementary amplifier circuit. 4,309,665, Cl. 330-264.000.

Yamashita, Keitaro; Goto, Ryuji; and Asanae, Masumi, to Hitachi Metals, Ltd. Electrophotography using a magnetic brush. 4,309,498, Cl. 430-100.000.

Yamashita, Yoshio: *See—*
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Yamato Scale Company Limited: *See—*
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Yamauchi, Hiroshi: *See—*
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Yamazaki, Yasuo: *See—*
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Yano, Kohzo; Takechi, Sadatoshi; Inami, Yasuhiko; and Uede, Hisashi, to Sharp Kabushiki Kaisha. Electrochromic display device manufacture method. 4,308,658, Cl. 29-570.000.

Yeda Research & Development Company Ltd.: *See—*
Epstein, Michael; and Dostrovsky, Israel, 4,309,257, Cl. 204-56.00R.

Yellin, Tobias O.; and Gilman, David J., to Imperial Chemical Industries Ltd.; and ICI Americas Inc. Antisecretory guanidine derivatives and pharmaceutical compositions containing them. 4,309,435, Cl. 424-269.000.

Yetman, Robert G.: *See—*
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Yokohama Rubber Co., Ltd.: *See—*
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Yokomichi, Isao: *See—*
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Yonezu, Hiroo: *See—*
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Yong, Thomas S.: *See—*
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Yoshida Kogyo K.K.: *See—*
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Hasegawa, Akira, 4,308,645, Cl. 24-205.11R.
Yamaguchi, Yoshiharu; and Horikawa, Mitsuo, 4,308,898, Cl. 139-384.00B.

Yoshida, Masashi; Kawase, Hideyuki; and Shinoda, Tadashi, to Hitachi, Ltd. Recording and playing system for magnetic tape from a cassette. 4,309,731, Cl. 360-85.000.

Yoshida, Minoru. Carrier for a motor vehicle. 4,308,983, Cl. 224-316.000.

Yoshida, Riichiro, to Copal Company Limited. Rotary snapping device. 4,308,738, Cl. 72-112.000.

Yoshida, Ryo: *See—*
Takemoto, Ichiki; Sumida, Seizo; Yoshida, Ryo; and Kamoshita, Katsuzo, 4,309,212, Cl. 71-120.000.

Yoshida, Yoshiaki: *See—*
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Yoshii, Tanekage. Method for detecting a magnetic source by measuring the magnetic field thereabout. 4,309,659, Cl. 324-345.000.

Yoshikawa, Toshihumi; Tani, Zempei; Aso, Akira; and Kawanabe, Hitoshi, to Sharp Kabushiki Kaisha. Apparatus for sensing the wavelength and intensity of light. 4,309,604, Cl. 250-226.000.

Yoshioka, Tamotu: *See—*
Ishikura, Shinichi; Mizuguchi, Ryuzo; Ishii, Keizou; and Yoshioka, Tamotu, 4,309,327, Cl. 260-29.60H.

Young, Ernst H., Jr., to Bell Telephone Laboratories, Incorporated. Buffer circuitry. 4,309,630, Cl. 307-584.000.

Young, Ruperto S., to Universal Medical Instrument Corporation. Amniocentesis needle. 4,308,875, Cl. 128-753.000.

Yuasa, Hitoshi; and Imai, Hirosuke, to Nippon Oil Company, Ltd. Solidification of liquids with polyhexamethylenimine. 4,309,324, Cl. 260-29.20N.

Zaferes, Constantine J., to Advanced Crystal Sciences, Inc. Process for chemical vapor deposition of films on silicon wafers. 4,309,240, Cl. 156-611.000.

Zelina, John H., Jr. Reflector. 4,309,745, Cl. 362-186.000.

Zener, Clarence: *See—*
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Zimmermann, Heiner: *See—*
Gotting, Joachim; and Zimmermann, Heiner, 4,309,472, Cl. 428-224.000.

Zitser, Vitaly A.; Melnikov, Alexandr V.; Bachelis, Leonid V.; Shishkin, Nikolai K.; Morozov, Jury E.; Ivanov, Vladimir A.; Olshansky, Semen A.; Dreishev, Igor I.; Stolyar, Eduard A.; Kushelman, Vladimir S.; Shartner, Eduard G.; Abaskalov, Vladimir D.; and Levinson, Vladimir A. Apparatus for manufacturing foundry cores. 4,308,909, Cl. 164-207.000.

Zweig, Richard L.; Schaefer, Jack; and Frank, Daniel G., to Therapeople, Inc. Apparatus for intercranial transmission of audio signals. 4,309,575, Cl. 179-107.0BC.

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LIST OF REISSUE PATENTEES

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Dayco Corporation: *See—*
Speer, Billy L., Re. 30,842, Cl. 474-135.000.

Flint, Theodore R. Epoxy tape. Re. 30,843, Cl. 428-48.000.

Kirknes, Bjorn: *See—*
Ramberg, Kjell O.; and Kirknes, Bjorn, Re. 30,841, Cl. 73-862.390.

MPD Technology Corporation: *See—*
Terry, Lynn E., Re. 30,840, Cl. 62-102.000.

Ramberg, Kjell O.; and Kirknes, Bjorn, to Simrad AS. Mechanism for gauging the catch within a trawl net. Re. 30,841, Cl. 73-862.390.

Simrad AS: *See—*
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Speer, Billy L., to Dayco Corporation. Tensioning apparatus. Re. 30,842, Cl. 474-135.000.

Terry, Lynn E., to MPD Technology Corporation. Hydrogen-hydride absorption systems and methods for refrigeration and heat pump cycles. Re. 30,840, Cl. 62-102.000.

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Allen, Steven R. Slide hammer nail puller. 262,513, 1-5-82, Cl. D8-89.000.

American Home Products Corporation: *See—*
Francis, Stephen A., 262,571, Cl. D24-17.000.

Anderson, Mark L. Animal udder fluid drain-injection tube and cover therefor. 262,577, 1-5-82, Cl. D24-61.000.

Anderson-Shanklin, Gene C.; and Araujo, Antonino, Jr., to Abbott Laboratories. Premature infant nipple or the like. 262,576, 1-5-82, Cl. D24-46.000.

Araujo, Antonino, Jr., to Abbott Laboratories. Cleft palate nipple or the like. 262,575, 1-5-82, Cl. D24-46.000.

Araujo, Antonino, Jr.: *See—*
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Argandona, Augusto, to Quaker Oats Company, The. Handle for push toys or similar articles. 262,551, 1-5-82, Cl. D21-59.000.

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Barton, Catherine M., to Quaker Oats Company, The. Rattle toy. 262,552, 1-5-82, Cl. D21-65.000.

Beath, Robert R., to Procter & Gamble Company, The. Column-type display device. 262,499, 1-5-82, Cl. D6-20.000.

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Fisher, Robert C., to Quaker Oats Company, The. Water activity toy. 262,550, 1-5-82, Cl. D21-59.000.

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Fontaine, Gary R. Ski maintenance machine. 262,541, 1-5-82, Cl. D15-124.000.

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Richmond, Colin B., II, to Oneida Ltd. Spoon or similar article. 262,509, 1-5-82, Cl. D7-137.000.
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LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 5TH DAY OF JANUARY, 1982

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Pateman, Jeffrey R. Process of paste extrusion. T101,402, 1-5-82, Cl. 264-127.000.

Zion, Earl M. Process and apparatus for forming elongate glass fiber reinforced products. T101,401, 1-5-82, Cl. 264-25.000.

CLASSIFICATION OF PATENTS

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CLASS 49

255 4,308,691
504 4,308,692

CLASS 51

164.2 4,308,693
165.8 4,308,694

CLASS 52

1 4,308,695
11 4,308,696
64 4,308,697
81 4,308,698
108 4,308,699
225 4,308,700
244 4,308,701
519 4,308,702
694 4,308,703
716 4,308,704
734 4,308,705
738 4,308,706

CLASS 53

137 4,308,708
207 4,308,709
314 4,308,707
433 4,308,710
511 4,308,711
566 4,308,712

CLASS 55

127 4,309,199
341 NT 4,309,200

CLASS 56

11.9 4,308,713
121.43 4,308,714

CLASS 57

119 4,308,715
286 4,308,716
301 4,308,717

CLASS 60

39.02 4,308,718
325 4,308,719
595 4,308,720
634 4,308,721
646 4,308,722

CLASS 62

102 Re.30,840
126 4,308,724
129 4,308,725
235.1 4,308,723
256 4,308,726

CLASS 63

32 4,308,727

CLASS 64

11 R 4,308,728
23 4,308,729

CLASS 65

2 4,309,201
3.1 4,309,202
4.1 4,309,203
28 4,309,204

CLASS 70

53 4,308,730
74 4,308,731
213 4,308,732
259 4,308,733

CLASS 71

27 4,309,205
28 4,309,206
79 4,309,207
86 4,309,208
91 4,309,209
93 4,309,210
4,309,211
108 4,309,562
120 4,309,212
4,309,213

CLASS 72

3 4,308,734
21 4,308,735
36 4,308,736
91 4,308,737
112 4,308,738
229 4,308,739
234 4,308,740
239 4,308,741
253.1 4,308,742
345 4,308,743
402 4,308,744
453.18 4,308,745

CLASS 73

40.5 R 4,308,746
146 4,308,747
147 4,308,748
170 A 4,308,749
432 PS 4,308,750
627 4,308,751
861.12 4,308,752
861.17 4,308,753
861.28 4,308,754
861.77 4,308,755
862.39 Re.30,841
863.85 4,308,756

CLASS 74

10.8 4,308,757
87 4,308,758
384 4,308,759
459.5 4,308,760
489 4,308,761
551.9 4,308,762
700 4,308,763
752 A 4,308,764
869 4,308,765

CLASS 75

0.5 B 4,309,214
109 4,309,215
256 4,309,216

CLASS 81

15.6 4,308,766
57.39 4,308,767
60 4,308,768
63 4,308,769
177 A 4,308,770

CLASS 82

36 R 4,308,771

CLASS 83

23 4,308,772
37 4,308,773
100 4,308,774
289 4,308,775
344 4,308,776
477.2 4,308,777
751 4,308,778

CLASS 84

1.19 4,308,779
293 4,308,780
383 R 4,308,781
414 4,308,782
439 4,308,783
452 R 4,308,784

CLASS 89

4 B 4,308,785
144 4,308,786

CLASS 91

6 4,308,787

CLASS 92

37 4,308,788

CLASS 99

289 R 4,308,789
380 4,308,790
459 4,308,791

CLASS 101

38 A 4,308,792
44 4,308,793
93.03 4,308,794
93.37 4,308,795
143 4,308,796
292 4,308,797
426 4,308,798
457 4,308,799

CLASS 105

159 4,308,800
199 C 4,308,801

CLASS 106

84 4,309,220
164 4,309,221
288 B 4,309,222
309 4,309,223

CLASS 108

156 4,308,802

CLASS 109

3 4,308,803
24.1 4,308,804

CLASS 110

163 4,308,805
244 4,308,806
257 4,308,807
342 4,308,808
346 4,308,809
347 4,308,810

CLASS 111

3 4,308,811

CLASS 112

97 4,308,812
143 4,308,813
158 E 4,308,814

CLASS 114

74 R 4,308,815
270 4,308,816

CLASS 116

215 4,308,817

CLASS 118

211 4,308,818
307 4,308,819
412 4,308,820
645 4,308,821
665 4,308,822
670 4,308,823
713 4,308,824

CLASS 119

1 4,308,825

CLASS 122

4 D 4,308,826

CLASS 123

44 D 4,308,836
90.39 4,308,828
188 M 4,308,829
4,308,830
198 F 4,308,831
306 4,308,832
368 4,308,833
383 4,308,834
439 4,308,835
442 4,308,837
492 4,308,838
496 4,308,839
519 4,308,840
520 4,308,841
4,308,842
525 4,308,843
539 4,308,844
541 4,308,827
549 4,308,845
568 4,308,846
573 4,308,847
618 4,308,848

CLASS 124

5 4,308,849
19 4,308,850
35 A 4,308,851

CLASS 125

16 R 4,308,852

CLASS 126

21 A 4,308,853
93 4,308,854
360 A 4,308,855
418 4,308,856
443 4,308,857
450 4,308,858

CLASS 128

1 R 4,308,859
62 R 4,308,860
68 4,308,861
91 R 4,308,862
92 A 4,308,863
132 D 4,308,864
200.14 4,308,865
214 E 4,308,866
260 4,308,867
421 4,308,868
478 4,308,869
640 4,308,870
686 4,308,871
725 4,308,872
731 4,308,873
745 4,308,874
753 4,308,875

CLASS 131

293 4,308,876
297 4,308,877

CLASS 132

37 R 4,308,878
88.5 4,308,879
92 A 4,308,880

CLASS 134

122 R 4,308,881

CLASS 135

1 R 4,308,882
8 4,308,883

CLASS 137

14 4,308,884
67 4,308,885
112 4,308,887
116.3 4,308,888
187 4,308,889
365 4,308,886
495 4,308,890
551 4,308,891
625.23 4,308,892
625.69 4,308,893
630.15 4,308,894

CLASS 138

125 4,308,895
126 4,308,896

CLASS 139

383 A 4,308,897
384 B 4,308,898

CLASS 141

1 4,308,899
4,308,900
114 4,308,901

CLASS 142

7 4,308,902

CLASS 144

193 C 4,308,903

CLASS 148

1.5 4,309,224
4,309,225
12.7 B 4,309,226
16.6 4,309,227
120 4,309,228

CLASS 149

82 4,309,229
109.6 4,309,230

CLASS 150

0.5 4,308,904
52 R 4,308,905

CLASS 152

219 4,308,906
353 R 4,308,907

CLASS 156

54 4,309,231
64 4,309,232
66 4,309,233
96 4,309,234
131 4,309,235
164 4,309,236
521 4,309,237
575 4,309,238
601 4,309,239
611 4,309,240
613 4,309,241
644 4,309,242

CLASS 159

24 B 4,309,243

CLASS 162

102 4,309,244
4,309,245
113 4,309,246
149 4,309,247
157 R 4,309,248

CLASS 164

207 4,308,909
464 4,308,908

CLASS 165

9.3 4,308,910
22 4,308,911
32 4,308,912
68 4,308,913
160 4,308,914
166 4,308,915

CLASS 166

86 4,308,916
326 4,308,918
381 4,308,917

CLASS 172

240 4,308,919
328 4,308,920
488 4,308,921

CLASS 173

18 4,308,922
26 4,308,923
135 4,308,924
136 4,308,925

162 R 4,308,926

CLASS 174

151 4,309,568

CLASS 175

107 4,308,927

CLASS 177

25 4,308,928
210 C 4,308,929

CLASS 178

22.08 4,309,569

CLASS 179

1 G 4,309,570
6.09 4,309,571
27 FE 4,309,572
81 B 4,309,573
84 T 4,309,574
107 BC 4,309,575
110 A 4,309,576
170 J 4,309,577
175.2 B 4,309,578

CLASS 180

89.2 4,308,930
235 4,308,931

CLASS 181

187 4,308,932
210 4,308,933

CLASS 182

184 4,308,934

CLASS 187

29 R 4,308,935
4,308,936

CLASS 188

43 4,308,937
73.45 4,308,938

CLASS 190

41 R 4,308,939

CLASS 192

103 FA 4,308,940

CLASS 194

1 C 4,308,941

CLASS 198

380 4,308,942
399 4,308,943
442 4,308,944
750 4,308,945
790 4,308,946

CLASS 200

5 E 4,309,579
144 R 4,309,580
148 R 4,309,581
153 T 4,309,582

CLASS 201

30 4,309,253

CLASS 203

47 4,309,254

CLASS 204

2 4,309,255
17 4,309,455
44 4,309,256
56 R 4,309,257
158 R 4,309,258
164 4,309,259
181 R 4,309,260
192 R 4,309,261
195 R 4,309,262
197 4,309,263
256 4,309,264
279 4,309,265
298 4,309,266
4,309,267
301 4,309,268

CLASS 206

5.1 4,308,947
45.25 4,308,948
148 4,308,949
188 4,308,950
214 4,308,951
216 4,308,952
334 4,308,953
505 4,308,954
509 4,308,955
611 4,308,956
626 4,308,957

CLASS 208

8 LE 4,309,269
8 R 4,309,270
57 4,309,271
72 4,309,272
78 4,309,273
80 4,309,274
109 4,309,275
4,309,276
111 4,309,277
4,309,278
120 4,309,279
4,309,280
310 Z 4,309,281

CLASS 209

166 4,309,282
211 4,309,283
273 4,309,284
518 4,308,958
563 4,308,959
612 4,308,960

CLASS 210

39 S 4,309,288
123 4,309,285
198.2 4,309,286
247 4,309,287
649 4,309,289
695 4,309,290
713 4,309,291
792 4,309,292

CLASS 211

94.5 4,308,961
118 4,308,962
126 4,308,964
153 4,308,963

CLASS 215

345 4,308,965

CLASS 219

7.5 4,309,583
10.55 B 4,309,584
4,309,585
10.77 4,309,586
73.11 4,309,587
75 4,309,588
121 ED 4,309,589
137.62 4,309,590
216 4,309,591
299 4,309,592
347 4,309,593
365 4,309,594
370 4,309,595
549 4,309,596
4,309,597

CLASS 220

21 4,308,966
71 4,308,967
222 4,308,968
266 4,308,969
306 4,308,970
315 4,308,971
335 4,308,972
454 4,308,973

CLASS 221

196 4,308,974

CLASS 222

36 4,308,975
78 4,308,976
320 4,308,977
449 4,308,978
516 4,308,979

CLASS 223

43 4,308,980
96 4,308,981

CLASS 224

202 4,308,982
316 4,308,983

CLASS 226

97 4,308,984

CLASS 229

31 R 4,308,985
33 4,308,986
52 B 4,308,995
73 4,308,987
80 4,308,988

CLASS 232

34 4,308,989

CLASS 235

92 MP 4,309,598
92 TF 4,309,599
375 4,309,600
449 4,309,601

CLASS 236

10 4,308,990
46 R 4,308,991
49 4,308,992

CLASS 237

2 A 4,308,993
12.3 B 4,308,994

CLASS 239

290 4,308,996

CLASS 241

47 4,308,997
101 B 4,308,998

CLASS 242

7.02 4,308,999
18 A 4,309,000
107.4 D 4,309,001
198 4,309,002

CLASS 244

3.16 4,309,003
4,309,004
4,309,005
33 4,309,006

CLASS 248

27.1 4,309,012
56 4,309,007
105 4,309,008
149 4,309,009
168 4,309,010
205 A 4,309,011
346 4,309,013
359 4,309,014
396 4,309,015
467 4,309,016
495 4,309,017
503 4,309,018
610 4,309,019

CLASS 249

204 4,309,020

CLASS 250

201 4,309,602
204 4,309,603
226 4,309,604
239 4,309,605
252 4,309,606
305 4,309,607
330 4,309,608
341 4,309,609
342 4,309,610
363 S 4,309,611
409 4,309,612
4,309,613
445 T 4,309,614
4,309,615
494 4,309,616
504 H 4,309,617
561 4,309,618

CLASS 251

26 4,309,021
61.4 4,309,022

CLASS 252

48.2 4,309,293
51.5 R 4,309,294
62.3 BT 4,309,295
67 4,309,296
70 4,309,297
95 4,309,298
4,309,299
170 4,309,300
172 4,309,301
182 4,309,302
186 4,309,303
299.63 4,309,304
358 4,309,306
372 4,309,307
417 4,309,308
4,309,309
431 P 4,309,310
438 4,309,311
448 4,309,312
455 Z 4,309,313
466 B 4,309,314
472 4,309,315
543 4,309,316
555 4,309,317
631 4,309,305

CLASS 254

273 4,309,023

CLASS 260

5 4,309,318
9 4,309,319
23 CP 4,309,321
23 R 4,309,320
28.5 A 4,309,323
28.5 R 4,309,322
29.2 N 4,309,324
29.4 R 4,309,325
29.6 F 4,309,328
29.6 H 4,309,327
29.6 NR 4,309,326
29.6 TA 4,309,329
29.7 H 4,309,330
30.6 R 4,309,331
40 R 4,309,332
42.14 4,309,333
42.15 4,309,334
45.7 PH 4,309,335
45.75 S 4,309,337
45.8 N 4,309,336
101 4,309,338
112 B 4,309,339
112.5 E 4,309,343
112.5 R 4,309,340
4,309,341
4,309,342
123.5 4,309,344
239 A 4,309,346
239 BB 4,309,345
245.2 R 4,309,347
326.28 4,309,348
340.3 4,309,349
340.5 R 4,309,350
340.9 P 4,309,351
343.45 4,309,353
343.5 4,309,352
345.2 4,309,354
346.11 4,309,355
4,309,356
413 4,309,357
429.7 4,309,358
453.1 4,309,360
465.3 4,309,361
501.12 4,309,362
513 R 4,309,363
931 4,309,364

CLASS 261

29 4,309,365
109 4,309,366
121 A 4,309,367

CLASS 264

22 4,309,368
31 4,309,369
40.5 4,309,370
43 4,309,371
45.3 4,309,372
51 4,309,373
115 4,309,374
167 4,309,375
241 4,309,376
294 4,309,377
311 4,309,378
328.2 4,309,379
511 4,309,380

CLASS 266

138 4,309,024
216 4,309,025

CLASS 267

121 4,309,026
124 4,309,027

CLASS 272

76 4,309,028
4,309,029

CLASS 273

1 GC 4,309,030
25 4,309,031
29 A 4,309,032
73 D 4,309,033
86 D 4,309,034
237 4,309,035
248 4,309,036
261 4,309,037
428 4,309,038

CLASS 277

1 4,309,039
80 4,309,040

CLASS 279

1 ME 4,309,041
75 4,309,042

CLASS 280

236 4,309,043
615 4,309,044
711 4,309,045

CLASS 281

21 R 4,309,046

CLASS 282

27.5 4,309,047

CLASS 285

7 4,309,048
18 4,309,049
341 4,309,050

CLASS 289

2 4,309,051

CLASS 290

1 R 4,309,619
4 R 4,309,620
52 4,309,621

CLASS 294

82 R 4,309,052

CLASS 296

1 S 4,309,053
36 4,309,054
63 4,309,055
91 4,309,056

CLASS 297

58 4,309,057
284 4,309,058

CLASS 299

11 4,309,059

CLASS 303

106 4,309,060

CLASS 307

150 4,309,622
200 A 4,309,623
221 D 4,309,624
272 A 4,309,625
303 4,309,626
362 4,309,627
419 4,309,628
449 4,309,629
584 4,309,630

CLASS 308

6 C 4,309,061
29 4,309,062
187.2 4,309,063
237 R 4,309,064

CLASS 310

50 4,309,631
52 4,309,632
105 4,309,633
201 4,309,634
211 4,309,635
260 4,309,636

CLASS 312

319 4,309,065

CLASS 313

60 4,309,637
447 4,309,638

CLASS 315

82 4,309,639
371 4,309,640
408 4,309,641

CLASS 316

19 4,309,066

CLASS 318

113 4,309,642
138 4,309,643
139 4,309,644
341 4,309,645
443 4,309,646
721 4,309,647

CLASS 322

28 4,309,648

CLASS 323

212 4,309,649
283 4,309,650
341 4,309,651
357 4,309,652
369 4,309,653

CLASS 324

65 R 4,309,654
117 R 4,309,655
131 4,309,656
158 R 4,309,657
327 4,309,658
345 4,309,659
442 4,309,660
453 4,309,661

CLASS 328

73 4,309,662
132 4,309,663
140 4,309,664

CLASS 330

264 4,309,665
286 4,309,666

CLASS 331

94.5 D 4,309,669
94.5 H 4,309,667
4,309,668
4,309,670
94.5 S 4,309,671
96 4,309,672
172 4,309,675

CLASS 332

16 R 4,309,673
18 4,309,674

CLASS 333

14 4,309,676
81 A 4,309,677
165 4,309,678
195 4,309,679
197 4,309,680

CLASS 335

18 4,309,681
128 4,309,682
132 4,309,683

CLASS 337

273 4,309,684
408 4,309,685

CLASS 338

2 4,309,686
4,309,687
25 4,309,688
42 4,309,689
163 4,309,690

CLASS 339

91 R 4,309,067
147 P 4,309,068
4,309,069

CLASS 340

146.3 MA 4,309,691
347 DA 4,309,693
347 DD 4,309,694
347 NT 4,309,692
514 4,309,695
515 4,309,696
572 4,309,697
590 4,309,698
715 4,309,699
726 4,309,700
784 4,309,701
870.18 4,309,702

CLASS 343

17.2 PC 4,309,703
18 E 4,309,704
4,309,705
100 R 4,309,706
713 4,309,708
727 4,309,709
754 4,309,710
895 4,309,707

CLASS 346

75 4,309,711
76 PH 4,309,712
135.1 4,309,713

CLASS 350

3.7 4,309,070
96.21 4,309,071
96.23 4,309,072
128 4,309,073
144 4,309,074
164 4,309,075
255 4,309,076
4,309,077
286 4,309,078
292 4,309,079
312 4,309,080
357 4,309,081
4,309,082
4,309,083
377 4,309,084

CLASS 351

39 4,309,085
140 4,309,086

CLASS 353

92 4,309,087

CLASS 354

21 4,309,088
23 D 4,309,089
31 4,309,090
4,309,091
33 4,309,092
59 4,309,093
80 4,309,094
81 4,309,095
121 4,309,096
173 4,309,097
195 4,309,098
293 4,309,099
303 4,309,100

CLASS 355

14 R 4,309,101
14 SH 4,309,102

CLASS 356

1 4,309,103
28 4,309,104
73.1 4,309,105
121 4,309,106
350 4,309,107
352 4,309,108
355 4,309,109
365 4,309,110
394 4,309,111

436 4,309,112

CLASS 357

22 4,309,714
37 4,309,715
50 4,309,716
74 4,309,717

CLASS 358

10 4,309,718
21 R 4,309,719
75 4,309,720
128.5 4,309,721
4,309,722
163 4,309,723
195.1 4,309,724
242 4,309,725

CLASS 360

32 4,309,726
69 4,309,727
71 4,309,728
72.1 4,309,729
77 4,309,730
85 4,309,731
104 4,309,732
105 4,309,733

CLASS 361

58 4,309,734
100 4,309,735
119 4,309,736
225 4,309,737
253 4,309,738
274 4,309,739

CLASS 362

66 4,309,740
72 4,309,741
78 4,309,742
104 4,309,743
147 4,309,744
186 4,309,745
259 4,309,746

CLASS 363

61 4,309,747
65 4,309,748
87 4,309,749
138 4,309,750
4,309,751
160 4,309,752

CLASS 364

200 4,309,753
4,309,754
4,309,755
300 4,309,756
416 4,309,757
424 4,309,758
431.05 4,309,759
835 4,309,760
900 4,309,761

CLASS 365

179 4,309,762

CLASS 366

4 4,309,113
79 4,309,114
4,309,115

CLASS 367

3 4,309,763

CLASS 370

83 4,309,764
99 4,309,765
110 4,309,766

CLASS 371

24 4,309,767
68 4,309,768

CLASS 375

1 4,309,769
14 4,309,770
58 4,309,771
76 4,309,772

CLASS 376

192 4,309,249
290 4,309,252
310 4,309,250
446 4,309,251

CLASS 400

124 4,309,116
697.1 4,309,118

CLASS 401

188 R 4,309,119

CLASS 403

18 4,309,120
164 4,309,121
307 4,309,122
408 4,309,123

CLASS 404

70 4,309,124
90 4,309,126

CLASS 405

60 4,309,127
154 4,309,128
269 4,309,129
294 4,309,130
4,309,131

CLASS 407

38 4,309,132

CLASS 408

183 4,309,133

CLASS 409

231 4,309,134

CLASS 411

17 4,309,135
36 4,309,136
45 4,309,137
55 4,309,138
187 4,309,139
264 4,309,140

CLASS 414

509 4,309,141
722 4,309,142

CLASS 415

2 R 4,309,146
90 4,309,143
105 4,309,144
170 R 4,309,145

CLASS 416

95 4,309,147

CLASS 417

18 4,309,148
63 4,309,149
206 4,309,151
218 4,309,152
229 4,309,150
252 4,309,153
337 4,309,154
360 4,309,155
403 4,309,156
421 4,309,157

CLASS 418

132 4,309,158

CLASS 422

3 4,309,381
4 4,309,382
12 4,309,383
64 4,309,384
83 4,309,385
177 4,309,386
201 4,309,387
304 4,309,388

CLASS 423

63 4,309,389
150 4,309,390
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